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Part III

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Bureau of Industry and Security

15 CFR Parts 738 et al.

**Revisions and Clarifications to the Export
Administration Regulations—Nuclear
Nonproliferation Controls: Nuclear
Suppliers Group; Final Rule**

DEPARTMENT OF COMMERCE**Bureau of Industry and Security****15 CFR Parts 738, 740, 742, 744, 772, and 774****[Docket No. 020717170-2170-01]****RIN 0694-AC52****Revisions and Clarifications to the Export Administration Regulations—Nuclear Nonproliferation Controls: Nuclear Suppliers Group****AGENCY:** Bureau of Industry and Security, Commerce.**ACTION:** Final rule.

SUMMARY: The Bureau of Industry and Security (BIS) is amending the Export Administration Regulations (EAR) by revising certain entries on its control list that are controlled for nuclear nonproliferation (NP) reasons. This final rule revises these entries to make them conform more closely to the format used in the technical descriptions of items identified in the Annex to the “Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Material, and Related Technology” (the Annex), which is published by the International Atomic Energy Agency. Member countries of the Nuclear Suppliers Group (NSG), which includes the United States, have established export licensing procedures for the transfer of items identified in the Annex.

This final rule also revises the types of controls and the scope of the controls that apply to a number of entries on the Commerce Control List (CCL). In addition, this rule amends the “Related Controls” paragraphs in a number of entries by adding references to related items that are either controlled under other entries on the CCL or controlled by other U.S. Government agencies.

As a result of the admission of Belarus, Cyprus, Slovenia, and Turkey to the Nuclear Suppliers Group, this rule adds these four countries to Country Group A:4, which identifies the member countries of the Nuclear Suppliers Group. These four countries are also added to the definition of the term “Nuclear Suppliers Group” in the EAR. The addition of these four countries will lessen the administrative burden on U.S. exporters by decreasing the number of items that require an export license to these countries for nuclear nonproliferation (NP) reasons.

DATES: This rule is effective August 29, 2002.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:**Background**

The Bureau of Industry and Security (BIS) maintains the Commerce Control List (CCL), Supplement No. 1 to part 774 of the Export Administration Regulations (EAR), which contains a number of items that are controlled for nuclear nonproliferation (NP) reasons. The items on the CCL that are controlled for NP reasons are referred to as “The Nuclear Referral List” and are subject to the licensing requirements and policies described in § 742.3 of the EAR. Most of the items on the Nuclear Referral List are identified in the Annex to the “Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Material, and Related Technology” (the Annex), which is published by the International Atomic Energy Agency in INFCIRC/254/Revision 4/Part 2. The United States, together with other participating countries in the Nuclear Suppliers Group, agreed to establish export licensing procedures to regulate exports and reexports of items identified in the Annex in accordance with the Nuclear Suppliers Guidelines.

This final rule amends the following Export Control Classification Numbers (ECCNs) on the CCL, which contain items controlled for NP reasons, by reformatting the control language in these ECCNs to conform more closely with the format used to describe such items in the Annex: 1A202, 1A226, 1A227, 1B201, 1B229, 1B230, 1B232, 1C202, 1C225 to 1C230, 1C232 to 1C237, 1C239, 1C240, 2A225, 2A226, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B228, 2B230 to 2B232, 3A201, 3A225 to 3A227, 3A229 to 3A231, 3A233, 6A202, 6A205, and 6A225. The following ECCNs are amended by revising the ECCN heading to conform more closely with the control language used in the Annex or with the scope of controls described in the Annex: 1B226, 1B231, 1B233, 1C216, 1C231, 1D101, 1D201, 1E101, 1E102, 1E201, 1E203, 2A204, 2B001, 2B004, 2B009, 2B290, 2B350, 2D101, 2E101, 2E201, 3E201, 6A005, and 6E201. ECCNs 2B201, 3A232, and 6A203 are amended by revising the List of Items Controlled for each ECCN to conform more closely with the control language used in the Annex.

This rule also revises the Related Controls paragraphs in a number of ECCNs containing items subject to NP controls by adding references to one or more of the following: (1) Related items controlled under other ECCNs on the CCL, (2) related items subject to the

export licensing authority of the Nuclear Regulatory Commission (NRC), and (3) related items subject to the export licensing authority of the Office of Defense Trade Controls (DTC), U.S. Department of State. The Related Controls paragraphs in the following ECCNs are revised: 1A002, 1A202, 1A225 to 1A227, 1B001, 1B101, 1B201, 1B225 to 1B233, 1C002, 1C010, 1C116, 1C202, 1C210, 1C216, 1C225 to 1C240, 1D001, 1D101, 1D201, 1E001, 2A225, 2A226, 2A290 to 2A293, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232, 2B290, 2B350, 2B991, 2D001, 2D002, 2D101, 2D201, 2D290, 3A201, 3A225 to 3A233, 3A292, 6A003, 6A005, 6A202, 6A203, 6A205, 6A225, 6A226, and 6D001.

In addition, this rule revises the Related Definitions paragraph in the following ECCNs: 1A227, 1B229, 1C202, 1C210, 1C216, 1C225, 1C233, 2A226, 2B204, 3A230, 3A225, and 3A229. The text has been removed from the Related Definitions paragraph for ECCN 2B206 and much of it has been included in a new ECCN Controls paragraph for this ECCN, while the text in the Related Definitions paragraphs for ECCNs 2B225 and 3A232 has been moved to new Technical Notes in these entries. The text in the Related Definitions paragraph for ECCN 6E201, which described the scope of controls for this ECCN, has been removed and the scope of controls for ECCN 6E201 is now described in a new ECCN Controls paragraph.

In order to clarify the kinds of items that are subject to the controls specified in the CCL (e.g., NP), this rule adds ECCN Controls paragraphs to the following ECCNs: 1B226, 1C216, 1C226, 1C230, 1C232 to 1C237, 1C240, 2B006, 2B109, 2B206, 2B207, 2B226, 2B350, 2D201, 3A229, 3A232, 6A225, and 6E201.

This final rule also revises the types of controls and/or the scope of certain controls that apply to the following ECCNs: 0D001 (now contains only DTC and NRC items), 0E001 (now contains only DOE and DTC items), 1B101 (scope of NP controls clarified), 1C235 (NP/AT controls added to tritium that is not subject to NRC export licensing authority), 1D101 (NP controls added to “software” for 1B101.a), 1E001 (NP controls removed from “technology” for 1C001 and added to “technology” for 1C002, 1C235, 1C239, and 1C240), 1E101 (NP controls added to “technology” for 1C116, 1D001 and 1D101), 1E102 (NP controls added to “technology” for 1D001 and 1D101), 2A226 (CB controls added to valves that meet or exceed 2B350.g specifications), 2A292 (CB controls added to valves that

meet or exceed 2B350.g specifications), 2B004 (scope of NP controls clarified), 2B007 (NP controls expanded to apply to 2B007.b, as well as 2B007.c), 2B009 (MT/NP controls clarified), 2B104 (NP controls added to "isostatic presses"), 2B109 (NP controls clarified to apply only to items that meet or exceed 2B209 specifications), 2B116 (NP controls clarified to apply to electrodynamic vibration test systems in 2B116.a and to all items in 2B116.b, .c, and .d), 2D101 (NP controls added to "software" for 2B104, 2B109, and 2B116; NS controls removed), 2E001 (MT controls added for "technology" for 2B105 and 2B117; NP1 controls added for "technology" for 2A225, 2A226, 2B116, 2B201, 2B227, 2B230, 2B232, 2D101, and 2D202; NP2 controls added for "technology" for 2A291 to 2A293, 2B290, and 2D290), 2E002 (MT controls added for "technology" for 2B105 and 2B117; NP1 controls added for "technology" for 2A225, 2A226, 2B116, 2B201, 2B227, 2B230, and 2B232; NP2 controls added for "technology" for 2A291 to 2A293 and 2B290), 2E101 (MT controls added to "technology" for 2B105, 2B117, and 2D001; NP controls added to "technology" for 2B009, 2D001, and 2D101), 2E201 (NP controls removed from "technology" for 2B008 and added to "technology" for 2B206 and 2D002; CB controls added to "technology" for valves controlled by 2A226 that meet or exceed 2B350.g specifications), 2E290 (CB controls added to "technology" for valves controlled by 2A292 that meet or exceed 2B350.g specifications), 3A001 (NP controls added for 3A001.e.2 and e.3 that meet or exceed specifications in 3A201.a and 3A201.b, respectively), 3E001 (NP controls added to "technology" for 3A001.e.2 and .e.3), 3E201 (NP controls added to "technology" for 3A001.e.2 and .e.3), 6A005 (NP controls added to 6A005.c.2.b.2.a; NP controls clarified for 6A005.a.1.c, .a.2.a, .a.4.c, .a.6, .c.1.b, .c.2.c.2, and .d.2.c), and 6E001 (NP controls added to "technology" for 6D001).

Eligibility for License Exception LVS is removed for items controlled for NP reasons in the following ECCNs: 1A002, 1C002, and 3A001. License Exception LVS authorizes shipments of limited value without a license to destinations in Country Group B (Supplement No. 1 to part 740 of the EAR), provided that the net value of the commodities included in the same order and controlled under the same ECCN on the CCL does not exceed the amount specified in the LVS paragraph for the applicable ECCN.

In ECCN 1C236, which controls certain alpha-emitting radionuclides,

the unit of measure is changed from "millicuries" to "gigabecquerels". The unit of measure is the standard applied by BIS to determine the amount of an item that will be authorized for export or reexport under a license.

This final rule also completely revises ECCN 0B003 by removing the original control language, which predated the adoption of the controls in the NSG Trigger List that apply to exports of nuclear material, equipment, and technology. ECCN 0B003 now contains plants for the conversion of uranium and equipment specially designed or prepared for such plants, all of which remain subject to the export licensing authority of the Nuclear Regulatory Commission. These plants were previously contained in ECCN 0B009, which is removed from the CCL. This change is part of BIS's effort to make the numbering of the CCL entries conform more closely with the List of Dual-Use Items and Technology implemented by the European Union (*i.e.*, Annex 1 to Council Regulation (EC) No. 1334/2000 of June 22, 2000, as amended, which established a Community regime for the control of exports of dual-use items and technology). BIS anticipates that greater uniformity between the CCL and the EU dual-use list will decrease the administrative burden on exporters and lessen the chances of inadvertent noncompliance with various export control requirements.

To further conform the numbering system in the CCL with the EU dual-use list, this final rule revises ECCN 2B104 and adds new ECCNs 2B105 and 2B117. ECCN 2B104, which previously controlled equipment and process controls designed or modified for densification and pyrolysis of structural composite rocket nozzles and reentry vehicle nose tips, now controls only "isostatic presses" (other than those controlled by 2B004) that have all of the following characteristics: (1) A maximum working pressure of 69 MPa or greater, (2) designed to achieve and maintain a controlled thermal environment of 873 K (600° C) or greater, and (3) a chamber cavity with an inside diameter of 254 mm or greater. New ECCN 2B105 controls CVD furnaces (other than those controlled by 2B005.a) that are designed or modified for the densification of carbon-carbon composites. New ECCN 2B117 controls equipment and process controls (other than those controlled by 2B004, 2B005.a, 2B104, or 2B105) that are designed or modified for densification and pyrolysis of structural composite rocket nozzles and reentry vehicle nose tips. ECCN 2B104 is now controlled for NP, as well as MT (missile technology)

and AT (anti-terrorism) reasons, while new ECCNs 2B105 and 2B117 are controlled for MT and AT reasons.

This rule also removes ECCN 0B008 and transfers the items previously controlled by this ECCN (*i.e.*, simulators and ultrasonic or eddy current test equipment specially designed for nuclear reactors) to ECCN 2A291, which controls certain equipment related to nuclear material handling and processing.

Finally, this rule amends the EAR to add Belarus, Cyprus, Slovenia, and Turkey as the four newest participating countries in the Nuclear Suppliers Group (which now includes a total of 39 countries) by revising Supplement No. 1 to part 740 (Country Groups) to add Belarus, Cyprus, Slovenia, and Turkey to Country Group A:4 (Nuclear Suppliers Group) and by revising Supplement No. 1 to Part 738 (Commerce Country Chart) to remove the licensing requirements for these four countries under NP Column 1 in conformance with the licensing policy that applies to other NSG member countries. Please note that exports of NP-controlled items to these countries may require a license for other reasons set forth in the CCL or elsewhere in the EAR. This rule also amends § 772.1, "Definitions of terms as used in the Export Administration Regulations (EAR)", by adding these four countries to the definition of the term "Nuclear Suppliers Group (NSG)".

Saving Clause

Shipments of items removed from License Exception LVS eligibility or NLR authorization as a result of this regulatory action that were on dock for loading, on lighter, laden aboard an exporting carrier, or en route aboard a carrier to a port of export, on August 29, 2002, pursuant to actual orders for export to a foreign destination, may proceed to that destination under the previous License Exception LVS eligibility or NLR authorization provisions so long as they have been exported from the United States before September 30, 2002. Any such items not actually exported before midnight, on September 30, 2002, require a license in accordance with this regulation.

Rulemaking Requirements

1. This rule has been determined to be not significant for purposes of Executive Order 12866.

2. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork

Reduction Act, unless that collection of information displays a currently valid OMB Control Number. This rule contains collections of information subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*). These collections have been approved by the Office of Management and Budget under Control Numbers 0694–0088 and 0694–0117.

3. This rule does not contain policies with Federalism implications as that term is defined in Executive Order 13132.

4. The provisions of the Administrative Procedure Act (5 U.S.C. 553) requiring notice of proposed rulemaking, the opportunity for public participation, and a delay in effective date, are inapplicable because this regulation involves a military and foreign affairs function of the United States (Sec. 5 U.S.C. 553(a)(1)). Further, no other law requires that a notice of proposed rulemaking and an opportunity for public comment be given for this final rule. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule under

5 U.S.C. 553 or by any other law, the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) are not applicable.

Therefore, this regulation is issued in final form. Although there is no formal comment period, public comments on this regulation are welcome on a continuing basis. Comments should be submitted to Willard Fisher, Regulatory Policy Division, Bureau of Industry and Security, U.S. Department of Commerce, Room 2705, 14th Street and Pennsylvania Avenue, NW., Washington, DC 20230.

List of Subjects

15 CFR Parts 738 and 772

Administrative practice and procedure, Exports, Foreign trade.

15 CFR Part 740

Administrative practice and procedure, Exports, Foreign trade, Reporting and recordkeeping requirements.

15 CFR Part 742

Exports, Foreign trade.

15 CFR Parts 744 and 774

Exports, Foreign trade, Reporting and recordkeeping requirements.

Accordingly, parts 738, 740, 742, 744, 772, and 774 of the Export Administration Regulations (15 CFR parts 730–799) are amended as follows:

PART 738—[AMENDED]

1. The authority citation for 15 CFR part 738 is revised to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 7420; 10 U.S.C. 7430(e); 18 U.S.C. 2510 *et seq.*; 22 U.S.C. 287c; 22 U.S.C. 3201 *et seq.*; 22 U.S.C. 6004; 30 U.S.C. 185(s), 185(u); 42 U.S.C. 2139a; 42 U.S.C. 6212; 43 U.S.C. 1354; 46 U.S.C. app. 466c; 50 U.S.C. app. 5; Sec. 901–911, Pub. L. 106–387; Sec. 221, Pub. L. 107–56; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

2. Supplement No. 1 to part 738 is amended by revising the entries for “Belarus”, “Cyprus”, “Slovenia”, and “Turkey” to read as follows:

BILLING CODE 3510–33–P

Supplement No. 1 to Part 738--COMMERCE COUNTRY CHART

* * * * *

Commerce Country Chart
Reason for Control

Countries	Chemical & biological weapons			Nuclear nonproliferation		National security		Missile tech		Regional stability		Firearms convention		Crime control		Anti-Terrorism	
	CB 1	CB 2	CB 3	NP 1	NP 2	NS 1	NS 2	MT 1	RS 1	RS 2	FC 1	CC 1	CC 2	CC 3	AT 1	AT 2	
Belarus	X	X	X			X	X	X	X	X		X	X				
Cyprus	X					X	X	X	X	X		X		X			
Slovenia	X	X				X	X	X	X	X		X		X			
Turkey	X					X		X	X								

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PART 740—[AMENDED]

3. The authority citation for 15 CFR Part 740 is revised to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; Sec. 901–911, Pub. L. 106–387; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

4. Section 740.10 is amended by revising paragraph (a)(3)(iii) to read as follows:

§ 740.10 Servicing and replacement of parts and equipment (RPL).

* * * * *

(a) * * *

(3) * * *

(iii) No parts may be exported to any destination, except the countries listed in Supplement No. 3 to Part 744 of the EAR (Countries Not Subject to Certain Nuclear End-Use Restrictions in § 744.2(a)) if the item is to be incorporated into or used in nuclear weapons, nuclear explosive devices, nuclear testing related to activities described in § 744.2(a) of the EAR, the chemical processing of irradiated special nuclear or source material, the production of heavy water, the separation of isotopes of source and special nuclear materials, or the

fabrication of nuclear reactor fuel containing plutonium, as described in § 744.2(a) of the EAR.

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5. In Supplement No. 1 to part 740, a heading reading “Country Groups” is added and Country Group A is amended by adding two new entries for “Belarus” and “Slovenia”, in alphabetical order, and by revising the entries for “Cyprus” and “Turkey” to read as follows:

Supplement No. 1 to Part 740—Country Groups

COUNTRY GROUP A

Country	Missile technology control regime	Australia group	Nuclear suppliers group
[A:1]	[A:2]	[A:3]	[A:4]
Belarus			X
Cyprus		X	X
Slovenia			X
Turkey	X	X	X

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PART 742—[AMENDED]

6. The authority citation for 15 CFR Part 742 is revised to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 18 U.S.C. 2510 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; Sec. 901–911, Pub. L. 106–387; Sec. 221, Pub. L. 107–56; E.O. 12058, 43 FR 20947, 3 CFR, 1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of November 9, 2001, 66 FR 56965, 3 CFR, 2001 Comp., p. 917; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

7. Section 742.2 is amended by revising paragraph (a)(3)(i) to read as follows:

§ 742.2 Proliferation of chemical and biological weapons.

(a) * * *

(3) * * *

(i) Equipment and materials identified in ECCNs 2B350 and 2B351 on the CCL (as well as valves controlled by ECCN 2A226 or ECCN 2A292 having the

characteristics of those controlled by 2B350.g), which can be used in the production of chemical weapons precursors or chemical warfare agents, and equipment and materials identified in ECCN 2B352, which can be used in the production of biological agents; and

PART 744—[AMENDED]

8. The authority citation for 15 CFR Part 744 is revised to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 22 U.S.C. 3201 *et seq.*; 42 U.S.C. 2139a; Sec. 901–911, Pub. L. 106–387; Sec. 221, Pub. L. 107–56; E.O. 12058, 43 FR 20947, 3 CFR, 1978 Comp., p. 179; E.O. 12851, 58 FR 33181, 3 CFR, 1993 Comp., p. 608; E.O. 12938, 59 FR 59099, 3 CFR, 1994 Comp., p. 950; E.O. 12947, 60 FR 5079, 3 CFR, 1995 Comp., p. 356; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13099, 63 FR 45167, 3 CFR, 1998 Comp., p. 208; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; E.O. 13224, 66 FR 49079, 3 CFR 2001 Comp., p. 786; Notice of November 9, 2001, 66 FR 56965, 3 CFR, 2001 Comp., p. 917; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

9. Section 744.2 is amended by revising paragraph (c) to read as follows:

§ 744.2 Restrictions on certain nuclear end-uses.

* * * * *

(c) *Exceptions.* Despite the prohibitions described in paragraphs (a) and (b) of this section, you may export technology subject to the EAR under the *operation technology and software* or *sales technology and software* provisions of License Exception TSU (see § 740.13(a) and (b)), but only to and for use in countries listed in Supplement No. 3 to Part 744 of the EAR (Countries Not Subject to Certain Nuclear End-Use Restrictions in § 744.2(a)). Notwithstanding the provisions of Part 740 of the EAR, the provisions of § 740.13(a) and (b) will only overcome General Prohibition Five for countries listed in Supplement No. 3 to Part 744 of the EAR.

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PART 772—[AMENDED]

10. The authority citation for 15 CFR Part 772 is revised to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

11. Section 772.1 is amended by revising the definition of "Nuclear Suppliers Group (NSG)" to read as follows:

§ 772.1 Definitions of terms as used in the Export Administration Regulations (EAR).

* * * * *

Nuclear Suppliers Group (NSG). The United States and other nations in this multilateral control regime have agreed to guidelines for restricting the export or reexport of items with nuclear applications. Members include: Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Canada, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Republic of Korea, Romania, Russia, Slovak Republic, Slovenia, Spain, South Africa, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States. See also § 742.3 of the EAR.

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PART 774—[AMENDED]

12. The authority citation for 15 CFR Part 774 is revised to read as follows:

Authority: 50 U.S.C. app. 2401 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 7420; 10 U.S.C. 7430(e); 18 U.S.C. 2510 *et seq.*; 22 U.S.C. 287c; 22 U.S.C. 3201 *et seq.*; 22 U.S.C. 6004; 30 U.S.C. 185(s), 185(u); 42 U.S.C. 2139a; 42 U.S.C. 6212; 43 U.S.C. 1354; 46 U.S.C. app. 466c; 50 U.S.C. app. 5; Sec. 901–911, Pub. L. 106–387; Sec. 221, Pub. L. 107–56; E.O. 13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783; Notice of August 14, 2002, 67 FR 53721, August 16, 2002.

13. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 0—Nuclear Materials, Facilities, and Equipment [and Miscellaneous Items], ECCN 0B003 is revised to read as follows:

0B003 Plant for the conversion of uranium and equipment specially designed or prepared therefor, as follows (see List of Items Controlled).

License Requirements

Reason for Control

Control(s)

Items described in 0B003 are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

Items:

- a. Systems for the conversion of uranium ore concentrates to UO₃;
- b. Systems for the conversion of UO₃ to UF₆;
- c. Systems for the conversion of UO₃ to UO₂;
- d. Systems for the conversion of UO₂ to UF₄;
- e. Systems for the conversion of UF₄ to UF₆;
- f. Systems for the conversion of UF₄ to uranium metal;
- g. Systems for the conversion of UF₆ to UO₂;
- h. Systems for the conversion of UF₆ to UF₄;
- i. Systems for the conversion of UO₂ to UCl₄.

14. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 0—Nuclear Materials, Facilities, and Equipment [and Miscellaneous Items], ECCNs 0B008 and 0B009 are removed.

15. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 0—Nuclear Materials, Facilities, and Equipment [and Miscellaneous Items], ECCN 0D001 is revised to read as follows:

0D001 "Software" specially designed or modified for the "development", "production", or "use" of items described in 0A001, 0A002, 0B (except 0B986 and 0B999), or 0C.

License Requirements

Reason for Control

Control(s)

"Software" for items described in 0A001, 0B001, 0B002, 0B003, 0B004, 0B005, 0B006, 0C001, 0C002, 0C004, 0C005, 0C006, or 0C201 is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

"Software" for items described in 0A002 is subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

Items: The List of Items Controlled is contained in the ECCN heading.

16. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 0

Nuclear Materials, Facilities, and Equipment [and Miscellaneous Items], ECCN 0E001 is revised to read as follows:

0E001 "Technology," according to the Nuclear Technology Note, for the "development", "production", or "use" of items described in 0A001, 0A002, 0B (except 0B986 and 0B999), 0C, or 0D001.

License Requirements

Reason for Control

Control(s)

"Technology" for items described in 0A001, 0B001, 0B002, 0B003, 0B004, 0B005, 0B006, 0C001, 0C002, 0C004, 0C005, 0C006, 0C201, or 0D001 (applies to "software" in 0D001 for all items except those described in 0A002) is subject to the export licensing authority of the Department of Energy (see 10 CFR part 810).

"Technology" for items described in 0A002 and 0D001 (applies to "software" in 0D001 for items described in 0A002 only) is subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

License Exceptions

CIV: N/A

TSR: N/A

List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

Items: The List of Items Controlled is contained in the ECCN heading.

17. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1A002 is amended by revising the License Exceptions section and by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1A002 "Composite" structures or laminates, having any of the following (see List of Items Controlled).

* * * * *

License Exceptions

LVS: \$1,500; N/A for NP; N/A for "composite" structures or laminates controlled by 1A002.a, having an organic "matrix" and made from materials controlled by 1C010.c or 1C010.d.

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Also see ECCNs 1A202, 1C010, 1C210, 9A010, and 9A110. (3) “Composite” structures specially designed for missile applications (including specially designed subsystems and components) are controlled by ECCN 9A110. (4) “Composite” structures or laminates specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: * * *

Items:

* * * * *

18. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1A202 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1A202 Composite structures, other than those controlled by 1A002, in the form of tubes and having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E201 (“use”) and 1E202 (“development” and “production”) for technology for items controlled by this entry. (2) Also see ECCNs 1A002, 1C010, 1C210, 9A010, and 9A110. (3) “Composite” structures specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. An inside diameter of between 75 mm and 400 mm; and
- b. Made with any of the “fibrous or filamentary materials” specified in 1C010.a or .b or 1C210.a or with carbon prepreg materials specified in 1C210.c.

19. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1A225 is amended by revising the List of Items Controlled to read as follows:

1A225 Platinized catalysts specially designed or prepared for promoting the hydrogen isotope exchange reaction between hydrogen and water for the recovery of tritium from heavy water or for the production of heavy water.

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E201 (“use”) and 1E202 (“development” and “production”) for technology for items controlled by this entry. (2) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

20. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1A226 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1A226 Specialized packings, which may be used in separating heavy water from ordinary water, having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 1E201 (“use”) and 1E202 (“development” and “production”) for technology for items controlled by this entry. (2) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. Made of phosphor bronze mesh chemically treated to improve wettability; and
- b. Designed to be used in vacuum distillation towers.

21. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1A227 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1A227 High-density (lead glass or other) radiation shielding windows, having all of the following characteristics (see List of Items Controlled), and specially designed frames therefor.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 1E201 (“use”) and 1E202 (“development” and “production”) for technology for items controlled by this entry. (2) Equipment specially designed or prepared for nuclear reactors and reprocessing facilities is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: In 1A227.a, the term “cold area” means the viewing area of the window exposed to the lowest level of radiation in the design application.

Items:

- a. A “cold area” greater than 0.09 m²;
- b. A density greater than 3 g/cm³; and
- c. A thickness of 100 mm or greater.

22. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B001 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1B001 Equipment for the production of fibers, preregs, preforms or “composites” controlled by 1A002 or 1C010, and specially designed components and accessories therefor.

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCN 1D001 for software for items controlled by this entry and see ECCNs 1E001 (“development” and “production”) and 1E101 (“use”) for technology for items controlled by this entry. (2) Also see ECCNs 1B101 and 1B201.

Related Definitions: * * *

Items:

* * * * *

23. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B101 is amended by revising the License Requirements section and by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1B101 Equipment, other than that controlled by ECCN 1B001, for the “production” of structural composites, and specially designed components and accessories therefor.

License Requirements

Reason for Control:

MT, NP, AT

Control(s)	Country Chart
MT applies to entire entry NP applies to filament winding machines described in 1B101.a that are capable of winding cylindrical rotors having a diameter between 75 mm (3 in.) and 400 mm (16 in.) and lengths of 600 mm (24 in.) or greater AND to coordinating and programming controls and precision mandrels for these filament winding machines.	MT Column 1. NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: See ECCN 1D101 for software for items controlled by this entry and see ECCNs 1E001 (“development” and “production”) and 1E101 (“use”) for technology for items controlled by this entry. Also see 1B201.

Related Definitions: * * *

Items:

* * * * *

24. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B201 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1B201 Filament winding machines, other than those controlled by ECCN 1B001 or 1B101, and related equipment, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCN 1D201 for software for items controlled by this entry and see ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. Also see ECCN 1E203 for technology for the “development”

of software controlled by ECCN 1D201.

Related Definitions: N/A

Items:

- a. Filament winding machines having all of the following characteristics:
 - a.1. Having motions for positioning, wrapping, and winding fibers coordinated and programmed in two or more axes;
 - a.2. Specially designed to fabricate composite structures or laminates from “fibrous or filamentary materials”; and
 - a.3. Capable of winding cylindrical rotors of diameter between 75 mm (3 in.) and 400 mm (16 in.) and lengths of 600 mm (24 in.) or greater;
- b. Coordinating and programming controls for filament winding machines controlled by 1B201.a;
- c. Precision mandrels for filament winding machines controlled by 1B201.a.

25. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B225 is amended by revising the List of Items Controlled to read as follows:

1B225 Electrolytic cells for fluorine production with an output capacity greater than 250 g of fluorine per hour.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

26. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B226 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1B226 Electromagnetic isotope separators designed for, or equipped with, single or multiple ion sources capable of providing a total ion beam current of 50 mA or greater.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) Electromagnetic isotope separators specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory

Commission (see 10 CFR part 110).

(2) See ECCNs 1E001

(“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

ECCN Controls: This entry includes separators capable of enriching stable isotopes and separators with the ion sources and collectors both in the magnetic field and those configurations in which they are external to the field.

Items: The list of items controlled is contained in the ECCN heading. 27. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B227 is amended by revising the list of items controlled to read as follows:

1B227 Ammonia synthesis converters or ammonia synthesis units in which the synthesis gas (nitrogen and hydrogen) is withdrawn from an ammonia/hydrogen high-pressure exchange column and the synthesized ammonia is returned to that column.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (2) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

28. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B228 is amended by revising the ECCN heading and by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1B228 Hydrogen-cryogenic distillation columns having all of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

(2) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: * * *

Items:

* * * * *

29. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B229 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1B229 Water-hydrogen sulphide exchange tray columns and “internal contactors”, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (2) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: The “internal contactors” controlled by 1B229.b are segmented trays that have an effective assembled diameter of 1.8 m (6 ft.) or greater, are designed to facilitate countercurrent contacting, and are constructed of stainless steels with a carbon content of 0.03% or less. These may be sieve trays, valve trays, bubble cap trays, or turbogrid trays.

Items:

- a. Water-hydrogen sulphide exchange tray columns, having all of the following characteristics:
 - a.1. Can operate at pressures of 2 MPa or greater;
 - a.2. Constructed of carbon steel having an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; *and*
 - a.3. With a diameter of 1.8 m (6 ft.) or greater;
- b. “Internal contactors” for the water-hydrogen sulphide exchange tray columns controlled by 1B229.a.

30. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B230 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1B230 Pumps capable of circulating solutions of concentrated or dilute potassium amide catalyst in liquid ammonia (KNH₂/NH₃), having all of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (2) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items:

- a. Airtight (i.e., hermetically sealed);
- b. A capacity greater than 8.5 m³/h; *and*
- c. Either of the following characteristics:
 - c.1. For concentrated potassium amide solutions (1% or greater), an operating pressure of 1.5 to 60 MPa (15–600 atmospheres); *or*
 - c.2. For dilute potassium amide solutions (less than 1%), an operating pressure of 20 to 60 MPa (200–600 atmospheres).

31. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B231 is amended by revising the ECCN heading and by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1B231 Tritium facilities or plants, and equipment therefor, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) Tritium, tritium compounds, and mixtures containing tritium are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (2) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: * * *

Items:

* * * * *

32. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN

1B232 is amended by revising the ECCN heading and by revising the List of Items Controlled to read as follows:

1B232 Turboexpanders or turboexpander-compressor sets having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) Equipment specially designed or prepared for the production of heavy water is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (2) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items:

- a. Designed for operation with an outlet temperature of 35 K (–238° C) or less; *and*
- b. Designed for a throughput of hydrogen gas of 1,000 kg/h or greater.

33. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1B233 is revised to read as follows:

1B233 Lithium isotope separation facilities or plants, and equipment therefor, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NP, AT

Control(s)	Country Chart
Facilities and plants described in 1B233.a are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).	
NP applies to 1B233.b	NP Column 1.
AT applies to 1B233.b	AT Column 1.

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: \$ value

Related Controls: See ECCN 1E001 (“development” and “production”) and ECCN 1E201 (“use”) for technology for items described in this entry.

Related Definitions: N/A

Items:

- a. Facilities or plants for the separation of lithium isotopes;
- b. Equipment for the separation of

lithium isotopes, as follows:

- b.1. Packed liquid-liquid exchange columns specially designed for lithium amalgams;
- b.2. Mercury and/or lithium amalgam pumps;
- b.3. Lithium amalgam electrolysis cells;
- b.4. Evaporators for concentrated lithium hydroxide solution.

34. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C002 is amended by revising the License Exceptions section and by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1C002 Metal alloys, metal alloy powder and alloyed materials, as follows (see List of Items Controlled).

* * * * *

License Exceptions
LVS: \$3,000; N/A for NP
GBS: N/A
CIV: N/A

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Also see ECCN 1C202. (3) Aluminum alloys and titanium alloys in physical forms and finished products specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: * * *

Items:

* * * * *

35. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C010 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

1C010 “Fibrous or filamentary materials” that may be used in organic “matrix”, metallic “matrix” or carbon “matrix” “composite” structures or laminates, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

(2) Also see ECCNs 1C210 and 1C990.

Related Definitions: * * *

Items:

* * * * *

36. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C116 is amended by revising the List of Items Controlled to read as follows:

1C116 Maraging steels (steels generally characterized by high nickel, very low carbon content and the use of substitutional elements or precipitates to produce age-hardening) having an ultimate tensile strength of 1,500 MPa or greater, measured at 293 K (20° C), in the form of sheet, plate or tubing with a wall or plate thickness equal to or less than 5 mm.

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E101 (“use”) for technology for items controlled by this entry. (2) Also see ECCN 1C216. (3) Maraging steel, in physical forms and finished products and specially designed or prepared for use in separating uranium isotopes, is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

37. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C202 is amended by revising the List of Items Controlled to read as follows:

1C202 Alloys, other than those controlled by 1C002.a.2.c or .d, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Also see ECCN 1C002. (3) Aluminum alloys and titanium alloys, in physical forms and finished products and specially designed or prepared for use in separating uranium isotopes, are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: The phrase “capable of” refers to aluminum

alloys and titanium alloys either before or after heat treatment.

Items:

a. Aluminum alloys having both of the following characteristics:

- a.1. “Capable of” an ultimate tensile strength of 460 MPa or more at 293 K (20° C); *and*
- a.2. In the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm;
- b. Titanium alloys having both of the following characteristics:
- b.1. “Capable of” an ultimate tensile strength of 900 MPa or more at 293 K (20° C); *and*
- b.2. In the form of tubes or cylindrical solid forms (including forgings) with an outside diameter of more than 75 mm.

38. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C210 is amended by revising the Related Controls and the Related Definitions paragraphs in the List of Items Controlled to read as follows:

1C210 “Fibrous or filamentary materials” or prepreps, other than those controlled by 1C010.a, .b or .e, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Also see ECCNs 1C010 and 1C990.

Related Definitions: For the purpose of this entry, the term “fibrous or filamentary materials” is restricted to continuous “monofilaments”, “yarns”, “rovings”, “tows”, or “tapes”. Definitions for other terms used in this entry:

Filament or Monofilament is the smallest increment of fiber, usually several μm in diameter.

Strand is a bundle of filaments (typically over 200) arranged approximately parallel.

Roving is a bundle (typically 12–120) of approximately parallel strands.

Yarn is a bundle of twisted strands.

Tow is a bundle of filaments, usually approximately parallel.

Tape is a material constructed of interlaced or unidirectional filaments, strands, rovings, tows, or yarns, etc., usually preimpregnated with resin.

Specific modulus is the Young’s modulus in N/m² divided by the

specific weight in N/m³, measured at a temperature of (296 ± 2) K ((23 ± 2)° C) and a relative humidity of 50 ± 5 percent.

Specific tensile strength is the ultimate tensile strength in N/m² divided by specific weight in N/m³, measured at a temperature of (296 ± 2) K ((23 ± 2)° C) and a relative humidity of 50 ± 5 percent.

Items:

* * * * *

39. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C216 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C216 Maraging steel, other than that controlled by 1C116, “capable of” an ultimate tensile strength of 2,050 MPa or more, at 293 K (20° C).

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Also see ECCN 1C116. (3) Maraging steel, in physical form and finished products specially designed or prepared for use in separating uranium isotopes, is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: The phrase “capable of” in the ECCN heading refers to maraging steel either before or after heat treatment.

ECCN Controls: This entry does not control forms in which all linear dimensions are 75 mm or less.

Items: The list of items controlled is contained in the ECCN heading.

40. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C225 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C225 Boron enriched in the boron-10 (¹⁰B) isotope to greater than its natural isotopic abundance, as follows: elemental boron, compounds, mixtures containing boron, manufactures thereof, waste or scrap of any of the foregoing.

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: In this entry, mixtures containing boron include boron-loaded materials.

Items:

Technical Note: The natural isotopic abundance of boron-10 is approximately 18.5 weight percent (20 atom percent).

The list of items controlled is contained in the ECCN heading.

41. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C226 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C226 Tungsten, tungsten carbide, and alloys containing more than 90% tungsten by weight, having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

ECCN Controls: This entry does not control manufactures specially designed as weights or gamma-ray collimators.

Items:

- In forms with a hollow cylindrical symmetry (including cylinder segments) with an inside diameter between 100 and 300 mm; *and*
- A mass greater than 20 kg.

42. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C227 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C227 Calcium having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items:

- Containing less than 1,000 parts per million by weight of metallic impurities other than magnesium;

and

- Containing less than 10 parts per million by weight of boron.

43. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C228 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C228 Magnesium having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Kilogram

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items:

- Containing less than 200 parts per million by weight of metallic impurities other than calcium; *and*
- Containing less than 10 parts per million by weight of boron.

44. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C229 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C229 Bismuth having both of the following characteristics (see List of Items Controlled)

* * * * *

List of Items Controlled

Unit: Kilograms

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items:

- A purity of 99.99% or greater by weight; *and*
- Containing less than 10 parts per million by weight of silver.

45. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C230 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C230 Beryllium metal, alloys containing more than 50% beryllium by weight, beryllium compounds, manufactures thereof, and waste or scrap of any of the foregoing.

* * * * *

List of Items Controlled*Unit:* Kilograms*Related Controls:* See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.*Related Definitions:* N/A*ECCN Controls:* This entry does not control the following:

- Metal windows for X-ray machines, or for bore-hole logging devices;
- Oxide shapes in fabricated or semi-fabricated forms specially designed for electronic component parts or as substrates for electronic circuits;
- Beryl (silicate of beryllium and aluminum) in the form of emeralds or aquamarines.

Items: The list of items controlled is contained in the ECCN heading.

46. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C231 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C231 Hafnium metal, hafnium alloys and compounds containing more than 60% hafnium by weight, manufactures thereof, and waste or scrap of any of the foregoing.

* * * * *

List of Items Controlled*Unit:* Kilograms*Related Controls:* See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.*Related Definitions:* N/A*Items:* The list of items controlled is contained in the ECCN heading.

47. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C232 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C232 Helium-3 (³He), mixtures containing helium-3, and products or devices containing any of the foregoing.

* * * * *

List of Items Controlled*Unit:* Liters*Related Controls:* See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.*Related Definitions:* N/A*ECCN Controls:* This entry does not control a product or device containing less than 1 g of helium-3.*Items:* The list of items controlled is contained in the ECCN heading.

48. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C233 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C233 Lithium enriched in the lithium-6 (⁶Li) isotope to greater than its natural isotopic abundance, and products or devices containing enriched lithium, as follows: elemental lithium, alloys, compounds, mixtures containing lithium, manufactures thereof, and waste or scrap of any of the foregoing.

* * * * *

List of Items Controlled*Unit:* Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Facilities or plants specially designed or prepared for the separation of lithium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: The natural isotopic abundance of lithium-6 is approximately 6.5 weight percent (7.5 atom percent).*ECCN Controls:* This entry does not control thermoluminescent dosimeters.*Items:* The list of items controlled is contained in the ECCN heading.

49. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C234 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C234 Zirconium with a hafnium content of less than 1 part hafnium to 500 parts zirconium by weight, as follows: metal, alloys containing more than 50% zirconium by weight, compounds, manufactures thereof, and waste or scrap of any of the foregoing.

* * * * *

List of Items Controlled*Unit:* Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Zirconium metal and alloys in the form of tubes or assemblies of tubes, specially designed or prepared for use in a reactor, are

subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A*ECCN Controls:* This entry does not control zirconium in the form of foil having a thickness of 0.10 mm (0.004 in.) or less.*Items:* The list of items controlled is contained in the ECCN heading.

50. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C235 is amended by revising the ECCN heading, the License Requirements section, and the List of Items Controlled to read as follows:

1C235 Tritium, tritium compounds, mixtures containing tritium in which the ratio of tritium to hydrogen atoms exceeds 1 part in 1,000, and products or devices containing any of the foregoing.

License Requirements*Reason for Control:* NP, AT

Control(s)	Country chart
NP applies to entire entry ..	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

* * * * *

List of Items Controlled*Unit:* Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Also see ECCN 1B231. (3) Tritium that is byproduct material (e.g., produced in a nuclear reactor) is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

ECCN Controls: (1) This entry does not control tritium, tritium compounds, and mixtures that are byproduct material (e.g., produced in a nuclear reactor)—such materials are subject to the licensing jurisdiction of the Nuclear Regulatory Commission (see Related Controls paragraph for this entry). (2) This entry does not control a product or device containing less than 1.48 x 10³ GBq (40 Ci) of tritium.

Items: The list of items controlled is contained in the ECCN heading.

51. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C236 is amended by revising the ECCN

heading and the List of Items Controlled to read as follows:

1C236 Alpha-emitting radionuclides having an alpha half-life of 10 days or greater, but less than 200 years, in the following forms (see List of Items Controlled).

* * * *

List of Items Controlled

Unit: Gigabecquerels

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Certain alpha-emitting radionuclides are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

ECCN Controls: This entry does not control a product or device containing less than 3.7 GBq (100 millicuries) of alpha activity.

Items:

- a. Elemental;
- b. Compounds having a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater;
- c. Mixtures having a total alpha activity of 37 GBq/kg (1 Ci/kg) or greater;
- d. Products or devices containing any of the items in 1C236.a., b., or c.

52. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C237 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C237 Radium-226 (²²⁶Ra), radium-226 alloys, radium-226 compounds, mixtures containing radium-226, manufactures thereof, and products or devices containing any of the foregoing.

* * * *

List of Items Controlled

Unit: Gigabecquerels

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

ECCN Controls: This entry does not control the following:

- a. Medical applicators;
- b. A product or device containing less than 0.37 GBq (10 millicuries) of radium-226.

Items: The list of items controlled is contained in the ECCN heading.

53. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals,

“Microorganisms,” and Toxins, ECCN 1C238 is amended by revising the List of Items Controlled to read as follows:

1C238 Chlorine trifluoride (ClF₃).

* * * *

List of Items Controlled

Unit: Kilograms

Related Controls: See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading. 54. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C239 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C239 High explosives, other than those controlled by the U.S. Munitions List, or substances or mixtures containing more than 2% by weight thereof, with a crystal density greater than 1.8 g/cm³ and having a detonation velocity greater than 8,000 m/s.

* * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) High explosives for military use are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade

Controls (see 22 CFR part 121.12).

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

55. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1C240 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1C240 Nickel powder or porous nickel metal, other than those described in 0C006, as follows (see List of Items Controlled).

* * * *

List of Items Controlled

Unit: Kilograms

Related Controls: (1) See ECCNs 1E001 (“development” and “production”) and 1E201 (“use”) for technology for items controlled by this entry. (2) Nickel powder and porous nickel metal, specially designed or

prepared for use in separating uranium isotopes, are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

ECCN Controls: This entry does not control the following:

- a. Filamentary nickel powders;
- b. Single porous nickel sheets with an area of 1,000 cm² per sheet or less.

Items:

- a. Nickel powder having both of the following characteristics:
 - a.1. A nickel purity content of 99.0% or greater by weight; and
 - a.2. A mean particle size of less than 10 micrometers measured by American Society for Testing and Materials (ASTM) B330 standard;
- b. Porous nickel metal produced from materials controlled by 1C240.a.

Technical Note: 1C240.b refers to porous metal formed by compacting and sintering the materials in 1C240.a to form a metal material with fine pores interconnected throughout the structure.

56. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1D001 is amended by revising the List of Items Controlled to read as follows:

1D001 “Software” specially designed or modified for the “development”, “production”, or “use” of equipment controlled by 1B001 to 1B003.

* * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 1E101 (“use”) and 1E102 (“development” and “production”) for technology for items controlled by this entry. (2) Also see ECCNs 1D101 and 1D102.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

57. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, “Microorganisms,” and Toxins, ECCN 1D101 is amended by revising the ECCN heading, the License Requirements section, and the List of Items Controlled to read as follows:

1D101 “Software” specially designed or modified for the “use” of items controlled by 1B101.

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.

Control(s)	Country chart
NP applies to "software" for the "use" of items controlled by 1B101.a.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

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List of Items Controlled*Unit:* \$ value

Related Controls: See ECCNs 1E101 ("use") and 1E102 ("development" and "production") for technology for items controlled by this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

58. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1D201 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

1D201 "Software" specially designed or modified for the "use" of items controlled by 1B201.

* * * * *

List of Items Controlled*Unit:* \$ value

Related Controls: See ECCNs 1E201 ("use") and 1E203 ("development" and "production") for technology for items controlled by this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

59. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1E001 is amended by revising the heading of the entry, the License Requirements section, and the List of Items Controlled to read as follows:

1E001 "Technology" according to the General Technology Note for the "development" or "production" of items controlled by 1A001.b, 1A001.c, 1A002, 1A003, 1A005, 1B, or 1C (except 1C355, 1C980 to 1C984, 1C988, 1C990, 1C991, 1C992, and 1C995).

License Requirements

Reason for Control: NS, MT, NP, CB, AT

Control(s)	Country Chart
NS applies to "technology" for items controlled by 1A001.b and .c, 1A002, 1A003, 1A005, 1B001 to 1B003, 1B018, 1C001 to 1C010, or 1C018.	NS Column 1.

Control(s)	Country Chart
MT applies to "technology" for items controlled by 1B001, 1B101, 1B115, 1B116, 1B117, 1C001, 1C007, 1C101, 1C107, 1C011, 1C111, 1C116, 1C117, or 1C118 for MT reasons.	MT Column 1.
NP applies to "technology" for items controlled by 1A002, 1B001, 1B101, 1B201, 1B225 to 1B233, 1C002, 1C010, 1C116, 1C202, 1C210, 1C216, 1C225 to 1C240 for NP reasons.	NP Column 1.
CB applies to "technology" for items controlled by 1C351, 1C352, 1C353, or 1C354.	CB Column 1.
CB applies to "technology" for materials controlled by 1C350.	CB Column 2.
AT applies to entire entry ..	AT Column 1.

License Requirements Note: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

License Exceptions

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List of Items Controlled*Unit:* N/A

Related Controls: (1) Also see ECCNs 1E101, 1E201, and 1E202. (2) "Technology" for lithium isotope separation (see related ECCN 1B233) and "technology" for items described in ECCN 1C012 are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (3) "Technology" for items described in ECCN 1A102 is subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

60. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1E101 is amended by revising the ECCN heading and the License Requirements section to read as follows:

1E101 "Technology" according to the General Technology Note for the "use" of items controlled by 1A102, 1B001, 1B101, 1B115, 1B116, 1B117, 1C001, 1C007, 1C011, 1C101, 1C107, 1C111, 1C116, 1C117, 1C118, 1D001, 1D101 or 1D103.

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
NP applies to "technology" for items controlled by 1B001, 1B101, 1C116, 1D001, and 1D101 for NP reasons.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

* * * * *

61. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1E102 is amended by revising the ECCN heading and the License Requirements section to read as follows:

1E102 "Technology" according to the General Technology Note for the "development" of items controlled by 1D001, 1D101 or 1D103.

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
NP applies to "technology" for items controlled by 1D001 and 1D101 for NP reasons.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

* * * * *

62. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1E201 is amended by revising the ECCN heading to read as follows:

1E201 "Technology" according to the General Technology Note for the "use" of items controlled by 1A002, 1A202, 1A225 to 1A227, 1B201, 1B225 to 1B232, 1B233.b, 1C002.a.2.c or .d, 1C010.a, 1C010.b, 1C010.e.1, 1C202, 1C210, 1C216, 1C225 to 1C240 or 1D201.

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63. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 1—Materials, Chemicals, "Microorganisms," and Toxins, ECCN 1E203 is amended by revising the ECCN heading to read as follows:

1E203 “Technology” according to the General Technology Note for the “development” or “production” of “software” controlled by 1D201.

* * * * *

64. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2A225 is amended by revising the List of Items Controlled to read as follows:

2A225 Crucibles made of materials resistant to liquid actinide metals, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCNs 2E001

(“development”), 2E002

(“production”), and 2E201 (“use”) for technology for items controlled under this entry.

Related Definitions: N/A

Items:

- a. Crucibles having both of the following characteristics:
 - a.1. A volume of between 150 cm³ and 8,000 cm³; and
 - a.2. Made of or coated with any of the following materials, having a purity of 98% or greater by weight:
 - a.2.a. Calcium fluoride (CaF₂);
 - a.2.b. Calcium zirconate (metazirconate) (CaZrO₃);
 - a.2.c. Cerium sulphide (Ce₂S₃);
 - a.2.d. Erbium oxide (erbia) (Er₂O₃);
 - a.2.e. Hafnium oxide (hafnia) (HfO₂);
 - a.2.f. Magnesium oxide (MgO);
 - a.2.g. Nitrided niobium-titanium-tungsten alloy (approximately 50% Nb, 30% Ti, 20% W);
 - a.2.h. Yttrium oxide (yttria) (Y₂O₃); or
 - a.2.i. Zirconium oxide (zirconia) (ZrO₂);
- b. Crucibles having both of the following characteristics:
 - b.1. A volume of between 50 cm³ and 2,000 cm³; and
 - b.2. Made of or lined with tantalum, having a purity of 99.9% or greater by weight;
- c. Crucibles having all of the following characteristics:
 - c.1. A volume of between 50 cm³ and 2,000 cm³;
 - c.2. Made of or lined with tantalum, having a purity of 98% or greater by weight; and
 - c.3. Coated with tantalum carbide, nitride, boride, or any combination thereof.

65. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2A226 is amended by revising the ECCN heading, the License Requirements section, and the List of Items Controlled to read as follows:

2A226 Valves having all of the following characteristics (see List of Items Controlled).

License Requirements

Reason for Control: NP, CB, AT

Control(s)	Country chart
NP applies to entire entry .. CB applies to valves that also meet or exceed the technical parameters in 2B350.g. AT applies to entire entry ..	NP Column 1. CB Column 3. AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001

(“development”), 2E002

(“production”), and 2E201 (“use”) for technology for items controlled

under this entry. (2) Also see ECCNs 2A292 and 2B350.g. (3) Valves specially designed or prepared for certain nuclear uses are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: For valves with different inlet and outlet diameters, the “nominal size” in 2A226 refers to the smallest diameter.

Items:

- a. A “nominal size” of 5 mm or greater;
- b. Having a bellows seal; and
- c. Wholly made of or lined with aluminum, aluminum alloy, nickel, or nickel alloy containing more than 60% nickel by weight.

66. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2A290 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

2A290 Generators and other equipment specially designed, prepared, or intended for use with nuclear plants.

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCN 2D290 for software for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E290 (“use”) for technology for items controlled under this entry. (3) Also see ECCN 2A291. (4) Certain nuclear equipment specially designed or prepared for use in nuclear plants is

subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: * * *

Items:

* * * * *

67. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2A291 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2A291 Equipment, except items controlled by 2A290, related to nuclear material handling and processing and to nuclear reactors.

* * * * *

List of Items Controlled

Unit: Equipment in number; parts and accessories in \$ value

Related Controls: (1) See ECCN 2D290

for software for items controlled

under this entry. (2) See ECCNs

2E001 (“development”), 2E002

(“production”), and 2E290 (“use”) for technology for items controlled

under this entry. (3) Also see ECCN

2A290. (4) Certain equipment specially designed or prepared for

use in a nuclear reactor or in

nuclear material handling is subject

to the export licensing authority of

the Nuclear Regulatory Commission

(see 10 CFR part 110). (5) Nuclear

radiation detection and

measurement devices specially

designed or modified for military

purposes are subject to the export

licensing authority of the

Department of State (see 22 CFR

parts 120 through 130).

Related Definitions: N/A

Items:

a. Process control systems intended for use with nuclear reactors.

b. Simulators specially designed for “nuclear reactors”.

c. Casks that are specially designed for transportation of high-level radioactive material and that weigh more than 1,000 kg.

d. Commodities, parts and accessories specially designed or prepared for use with nuclear plants (e.g., snubbers, airlocks, pumps, reactor fuel charging and discharging

equipment, containment equipment such as hydrogen recombiner and penetration seals, and reactor and fuel inspection equipment, including ultrasonic or eddy current test equipment).

e. Radiation detectors and monitors specially designed for detecting or measuring “special nuclear material” (as defined in 10 CFR part

110) or for nuclear reactors.

Technical Notes: 1. 2A291.e does not control neutron flux detectors and monitors. These are subject to the export licensing authority of the Nuclear Regulatory Commission, pursuant to 10 CFR part 110.

2. 2A291.e does not control general purpose radiation detection equipment, such as geiger counters and dosimeters. These items are controlled by ECCN 1A999.

68. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2A292 is amended by revising the License Requirements section and the List of Items Controlled to read as follows:

2A292 Piping, fittings and valves made of, or lined with, stainless steel, copper-nickel alloy or other alloy steel containing 10% or more nickel and/or chromium.

License Requirements

Reason for Control: NP, CB, AT

Control(s)	Country chart
NP applies to entire entry .. CB applies to valves that meet or exceed the technical parameters described in 2B350.g.	NP Column 2. CB Column 3.
AT applies to entire entry ..	AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: Pressure tubes, pipes, and fittings in kilograms; valves in number; parts and accessories in \$ value

Related Controls: (1) See ECCN 2D290 for software for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E290 (“use”) for technology for items controlled under this entry. (3) Also see ECCN 2A226. (4) Piping, fittings, and valves specially designed or prepared for certain nuclear uses are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- Pressure tube, pipe, and fittings of 200 mm (8 in.) or more inside diameter, and suitable for operation at pressures of 3.4 MPa (500 psi) or greater;
- Pipe valves having all of the following characteristics:
 - A pipe size connection of 200 mm (8 in.) or more inside diameter; and
 - Rated at 10.3 MPa (1,500 psi) or more.

69. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2A293 is amended by revising the List of Items Controlled to read as follows:

2A293 Pumps designed to move molten metals by electromagnetic forces.

* * * * *

List of Items Controlled

Unit: Equipment in number

Related Controls: (1) See ECCN 2D290 for software for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E290 (“use”) for technology for items controlled under this entry. (3) Pumps for use in liquid-metal-cooled reactors are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

70. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B001 is amended by revising the ECCN heading and the Related Controls paragraph in the List of Items Controlled to read as follows:

2B001 Machine tools and any combination thereof, for removing (or cutting) metals, ceramics or “composites”, which, according to the manufacturer’s technical specifications, can be equipped with electronic devices for “numerical control”.

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 2D001 and 2D002 for software for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B201, 2B290, and 2B991.

Related Definitions: * * *

Items:

* * * * *

71. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B004 is amended by revising the ECCN heading, the License Requirements section, and the Related Controls paragraph in the List of Items Controlled to read as follows:

2B004 Hot “isostatic presses”, having all of the characteristics described in the List of Items Controlled, and specially designed components and accessories therefor.

License Requirements

Reason for Control: NS, MT NP, AT

Control(s)	Country chart
NS applies to entire entry .. MT applies to entire entry NP applies to entire entry, except 2B004.b.3 and presses with maximum working pressures below 69 MPa.	NS Column 2. MT Column 1. NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCN 2D001 for software for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”) for technology for items controlled under this entry. (3) For specially designed dies, molds and tooling, see ECCNs 1B003 and 9B009 and ML18 (22 CFR part 121). (4) For additional controls on dies, molds and tooling, see ECCNs 1B101.d, 2B104 and 2B204. (5) Also see ECCN 2B117.

Related Definitions: * * *

Items:

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72. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B006 is amended by revising the List of Items Controlled to read as follows:

2B006 Dimensional inspection or measuring systems and equipment, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Equipment in number

Related Controls: (1) See ECCNs 2D001 and 2D002 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B206 and 2B996.

Related Definitions: N/A

ECCN Controls: (1) Machine tools that can be used as measuring machines are controlled by this entry if they meet or exceed the criteria specified for the machine tool function or the

measuring machine function. (2) A machine described in this entry is controlled if it exceeds the control threshold anywhere within its operating range.

Items:

- a. Computer controlled, “numerically controlled” or “stored program controlled” dimensional inspection machines, having a three dimensional length (volumetric) “measurement uncertainty” equal to or less (better) than $(1.7 + L/1,000) \mu\text{m}$ (L is the measured length in mm) tested according to ISO 10360-2;
- b. Linear and angular displacement measuring instruments, as follows:
 - b.1. Linear measuring instruments having any of the following:
 - b.1.a. Non-contact type measuring systems with a “resolution” equal to or less (better) than $0.2 \mu\text{m}$ within a measuring range up to 0.2 mm ;
 - b.1.b. Linear variable differential transformer (LVDT) systems having all of the following:
 - b.1.b.1. “Linearity” equal to or less (better) than 0.1% within a measuring range up to 5 mm ; and
 - b.1.b.2. Drift equal to or less (better) than 0.1% per day at a standard ambient test room temperature $\pm 1 \text{ K}$; or
 - b.1.c. Measuring systems having all of the following:
 - b.1.c.1. Containing a “laser”; and
 - b.1.c.2. Maintaining, for at least 12 hours, over a temperature range of $\pm 1 \text{ K}$ around a standard temperature and at a standard pressure, all of the following:
 - b.1.c.2.a. A “resolution” over their full scale of $0.1 \mu\text{m}$ or less (better); and
 - b.1.c.2.b. A “measurement uncertainty” equal to or less (better) than $(0.2 + L/2,000) \mu\text{m}$ (L is the measured length in mm);

Note: 2B006.b.1 does not control measuring interferometer systems, without closed or open loop feedback, containing a “laser” to measure slide movement errors of machine-tools, dimensional inspection machines or similar equipment.

- b.2. Angular measuring instruments having an “angular position deviation” equal to or less (better) than 0.00025° ;

Note: 2B006.b.2 does not control optical instruments, such as autocollimators, using collimated light to detect angular displacement of a mirror.

- c. Equipment for measuring surface irregularities, by measuring optical

scatter as a function of angle, with a sensitivity of 0.5 mm or less (better).

73. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B007 is amended by revising License Requirements section and the List of Items Controlled to read as follows:

2B007 “Robots” having any of the following characteristics described in the List of Items Controlled and specially designed controllers and “end-effectors” therefor.

License Requirements

Reason for Control: NS, NP, AT

Control(s)	Country chart
NS applies to entire entry .. NP applies to 2B007.b and 2B007.c and to specially designed controllers and “end-effectors” therefor. AT applies to entire entry ..	NS Column 2. NP Column 1. AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCN 2D001 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B207, 2B225 and 2B997.

Related Definitions: N/A

Items:

- a. Capable in real time of full three-dimensional image processing or full three-dimensional “scene analysis” to generate or modify “programs” or to generate or modify numerical program data;
- Technical Note:* The “scene analysis” limitation does not include approximation of the third dimension by viewing at a given angle, or limited grey scale interpretation for the perception of depth or texture for the approved tasks ($2^{1/2} \text{ D}$).
- b. Specially designed to comply with national safety standards applicable to explosive munitions environments;
- c. Specially designed or rated as radiation-hardened to withstand a total radiation dose greater than $5 \times 10^3 \text{ Gy}$ (silicon) without operational degradation; or

Technical Note: The term Gy (silicon) refers to the energy in Joules per kilogram absorbed by an unshielded

silicon sample when exposed to ionizing radiation.

- d. Specially designed to operate at altitudes exceeding $30,000 \text{ m}$.

74. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B009 is amended by revising the ECCN heading, the License Requirements section, and the Related Controls paragraph in the List of Items Controlled to read as follows:

2B009 Spin-forming machines and flow-forming machines, which, according to the manufacturer’s technical specifications, can be equipped with “numerical control” units or a computer control and having all of the following characteristics (see List of Items Controlled).

License Requirements

Reason for Control: NS, MT, NP, AT

Control(s)	Country chart
NS applies to entire entry .. MT applies to: spin-forming machines combining the functions of spin-forming and flow-forming; flow-forming machines. NP applies to flow-forming machines, and spin-forming machines capable of flow-forming functions, that meet or exceed the parameters of 2B209. AT applies to entire entry ..	NS Column 2. MT Column 1. NP Column 1. AT Column 1.

License Exceptions

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List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCN 2D001 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B109 and 2B209.

Related Definitions: * * *

Items:

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75. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B104 is amended by revising the ECCN heading, the License Requirements section, and the List of Items Controlled to read as follows:

2B104 “Isostatic presses”, other than those controlled by 2B004, having all of the following characteristics (see List of Items Controlled).

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
NP applies to entire entry ..	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: Equipment in number

Related Controls: (1) See ECCN 2D101 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B004, 2B204, and 2B117.

Related Definitions: N/A

Items:

- Maximum working pressure of 69 MPa or greater;
- Designed to achieve and maintain a controlled thermal environment of 873 K (600° C) or greater; and
- Possessing a chamber cavity with an inside diameter of 254 mm or greater.

76. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, new ECCN 2B105 is added immediately following ECCN 2B104 to read as follows:

2B105 Chemical vapor deposition (CVD) furnaces, other than those controlled by 2B005.a, designed or modified for the densification of carbon-carbon composites.

License Requirements

Reason for Control: MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled

Unit: Equipment in number

Related Controls: (1) See ECCN 2D101 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”)

for technology for items controlled under this entry. (3) Also see ECCNs 2B005 and 2B117.

Related Definitions: N/A

Items: The list of items controlled in contained in the ECCN heading.

77. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B109 is amended by revising the License Requirements section and the List of Items Controlled to read as follows:

2B109 Flow-forming machines, other than those controlled by 2B009, and specially designed components therefor.

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
NP applies to items controlled by this entry that meet or exceed the technical parameters in 2B209.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

* * * * *

List of Items Controlled

Unit: Equipment in number

Related Controls: (1) See ECCN 2D101 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B009 and 2B209.

Related Definitions: N/A

ECCN Controls: (1) This entry controls only flow-forming machines and spin-forming machines combining the functions of spin-forming and flow-forming. (2) This entry does not control machines that are not usable in the production of propulsion components and equipment (e.g., motor cases) for systems controlled by 9A005, 9A007, or 9A105.

Items:

- Flow-forming machines having all of the following:
 - According to the manufacturer’s technical specification, can be equipped with “numerical control” units or a computer control, even when not equipped with such units; and
 - With more than two axes that can be coordinated simultaneously for “contouring control”.
- Specially designed components for

flow-forming machines controlled by 2B009 or 2B109.a.

Technical Note: Machines combining the function of spin-forming and flow-forming are, for the purpose of this entry, regarded as flow-forming machines.

78. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B116 is amended by revising the License Requirements section and the Related Controls paragraph in the List of Items Controlled to read as follows:

2B116 Vibration test systems, equipment and components therefor, as follows (see List of Items Controlled).

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
NP applies to electro-dynamic vibration test systems in 2B116.a and to all items in 2B116.b, .c, and .d.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

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List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCN 2D101 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”) for technology for items controlled under this entry. (3) Also see ECCN 9B990.

Related Definitions: * * *

Items:

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79. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, new ECCN 2B117 is added immediately following ECCN 2B116 to read as follows:

2B117 Equipment and process controls, other than those controlled by 2B004, 2B005.a, 2B104 or 2B105, designed or modified for the densification and pyrolysis of structural composite rocket nozzles and reentry vehicle nose tips.

License Requirements

Reason for Control: MT, AT

Control(s)	Country chart
MT applies to entire entry	MT Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

LVS: N/A

GBS: N/A

CIV: N/A

List of Items Controlled*Unit:* Equipment in number

Related Controls: (1) See ECCN 2D101 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E101 (“use”) for technology for items controlled under this entry. (3) *Also see* ECCNs 2B004, 2B005, 2B104, 2B105, and 2B204.

Related Definitions: N/A

Items: The list of items controlled in contained in the ECCN heading.

80. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B201 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B201 Machine tools, other than those controlled by 2B001, for removing or cutting metals, ceramics or “composites”, which, according to the manufacturer’s technical specifications, can be equipped with electronic devices for simultaneous “contouring control” in two or more axes.

* * * * *

List of Items Controlled

Unit: Equipment in number; parts and accessories in \$ value

Related Controls: (1) See ECCNs 2D002 and 2D202 for “software” for items controlled by this entry. “Numerical control” units are controlled by their associated “software”. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) *Also see* ECCNs 2B001, 2B290, and 2B991.

Related Definitions: N/A*Items:*

- a. Machine tools for milling, having any of the following characteristics:
 - a.1. Positioning accuracies with “all compensations available” equal to or less (better) than 6 μ m along any linear axis (overall positioning); or
 - a.2. Two or more contouring rotary axes.

Note: 2B201.a does not control milling machines having the following characteristics:

- a. X-axis travel greater than 2 m; and
- b. Overall positioning accuracy on the x-axis more (worse) than 30 μ m.
- b. Machine tools for grinding, having any of the following characteristics:

- b.1. Positioning accuracies with “all compensations available” equal to or less (better) than 4 μ m along any linear axis (overall positioning); or
- b.2. Two or more contouring rotary axes.

Note: 2B201.b does not control the following grinding machines:

- a. Cylindrical external, internal, and external-internal grinding machines having all of the following characteristics:
 - 1. Limited to cylindrical grinding;
 - 2. A maximum workpiece outside diameter or length of 150 mm;
 - 3. Not more than two axes that can be coordinated simultaneously for “contouring control”; and
 - 4. No contouring c-axis.
- b. Jig grinders with axes limited to x, y, c and a where c axis is used to maintain the grinding wheel normal to the work surface, and the a axis is configured to grind barrel cams;
- c. Tool or cutter grinding machines with “software” specially designed for the production of tools or cutters; or
- d. Crankshaft or camshaft grinding machines.

81. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B204 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B204 “Isostatic presses”, other than those controlled by 2B004 or 2B104, and related equipment, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled*Unit:* Equipment in number

Related Controls: (1) See ECCN 2D201 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) *Also see* ECCNs 2B004 and 2B104.

Related Definitions: The inside chamber dimension is that of the chamber in which both the working temperature and working pressure are achieved and does not include fixtures. That dimension will be the smaller of either the inside diameter of the pressure chamber or the inside diameter of the insulated chamber, depending on which of the two chambers is located inside the other.

Items:

- a. “Isostatic presses” having both of the following characteristics:
 - a.1. Capable of achieving a maximum working pressure of 69 MPa or greater; and
 - a.2. A chamber cavity with an inside

diameter in excess of 152 mm;

- b. Dies, molds and controls, specially designed for “isostatic presses” controlled by 2B204.a.

82. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B206 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B206 Dimensional inspection machines, instruments or systems, other than those described in 2B006, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Equipment in number; parts and accessories in \$ value

Related Controls: (1) See ECCNs 2D002 and 2D201 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) *Also see* ECCNs 2B006 and 2B996.

Related Definitions: N/A

ECCN Controls: (1) Machine tools that can be used as measuring machines are controlled by this entry if they meet or exceed the criteria specified for the machine tool function or the measuring machine function. (2) A machine described in this entry is controlled if it exceeds the control threshold anywhere within its operating range.

Items:

- a. Computer controlled or numerically controlled dimensional inspection machines having both of the following characteristics:
 - a.1. Two or more axes; and
 - a.2. A one-dimensional length “measurement uncertainty” equal to or less (better) than $(1.25 + L/1000)$ μ m tested with a probe of an “accuracy” of less (better) than 0.2 μ m (L is the measured length in millimeters) (Ref.: VDI/VDE 2617 Parts 1 and 2);
- b. Systems for simultaneously linear-angular inspection of hemishells, having both of the following characteristics:
 - b.1. “Measurement uncertainty” along any linear axis equal to or less (better) than 3.5 μ m per 5 mm; and
 - b.2. “Angular position deviation” equal to or less than 0.02°.

Technical Notes: (1) The probe used in determining the measurement uncertainty of a dimensional inspection system shall be described in VDI/VDE 2617 parts 2, 3 and 4. (2) All parameters of measurement values in this entry

represent plus/minus, i.e., not total band.

83. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B207 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B207 “Robots”, “end-effectors” and control units, other than those controlled by 2B007, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCN 2D201 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B007, 2B225, and 2B997.

Related Definitions: N/A

ECCN Controls: This entry does not control “robots” specially designed for non-nuclear industrial applications, such as automobile paint-spraying booths.

Items:

- a. “Robots” or “end-effectors” specially designed to comply with national safety standards applicable to handling high explosives (for example, meeting electrical code ratings for high explosives);
- b. Control units specially designed for any of the “robots” or “end-effectors” controlled by 2B207.a.

84. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B209 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B209 Flow forming machines, spin forming machines capable of flow forming functions, other than those controlled by 2B009 or 2B109, and mandrels, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Equipment in number; parts and accessories in \$ value

Related Controls: (1) See ECCN 2D201 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B009 and 2B109.

Related Definitions: N/A

Items:

a. Machines having both of the following characteristics:

- a.1. Three or more rollers (active or guiding); and
- a.2. According to the manufacturer’s technical specifications, can be equipped with “numerical control” units or a computer control;

Note: 2B209.a includes machines that have only a single roller designed to deform metal, plus two auxiliary rollers that support the mandrel, but do not participate directly in the deformation process.

- b. Rotor-forming mandrels designed to form cylindrical rotors of inside diameter between 75 mm and 400 mm.

85. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B225 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B225 Remote manipulators that can be used to provide remote actions in radiochemical separation operations or hot cells, having either of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCNs 2B007 and 2B207. (3) Remote manipulators specially designed or prepared for use in fuel reprocessing or for use in a reactor are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. A capability of penetrating 0.6 m or more of hot cell wall (through-the-wall operation); or
- b. A capability of bridging over the top of a hot cell wall with a thickness of 0.6 m or more (over-the-wall operation).

Technical Note: Remote manipulators provide translation of human operator actions to a remote operating arm and terminal fixture. They may be of “master/slave” type or operated by joystick or keypad.

86. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B226 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B226 Controlled atmosphere (vacuum or inert gas) induction furnaces, and power supplies therefor, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCN 2B227 and Category 3B.

Related Definitions: N/A

ECCN Controls: 2B226.a does not control furnaces designed for the processing of semiconductor wafers.

Items:

- a. Furnaces having all of the following characteristics:
 - a.1. Capable of operation above 1,123 K (850° C);
 - a.2. Induction coils 600 mm or less in diameter; and
 - a.3. Designed for power inputs of 5 kW or more;
- b. Power supplies, with a specified power output of 5 kW or more, specially designed for furnaces controlled by 2B226.a.

87. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B227 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B227 Vacuum or other controlled atmosphere metallurgical melting and casting furnaces and related equipment, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCN 2D201 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCN 2B226.

Related Definitions: N/A

Items:

- a. Arc remelt and casting furnaces having both of the following characteristics:
 - a.1. Consumable electrode capabilities between 1,000 cm³ and 20,000 cm³; and
 - a.2. Capable of operating with melting temperatures above 1,973 K (1,700° C);
- b. Electron beam melting furnaces and plasma atomization and melting

furnaces, having both of the following characteristics:

- b.1. A power of 50 kW or greater; *and*
- b.2. Capable of operating with melting temperatures above 1,473 K (1,200° C);
- c. Computer control and monitoring systems specially configured for any of the furnaces controlled by 2B227.a or .b.

88. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B228 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B228 Rotor fabrication and assembly equipment, rotor straightening equipment, bellows-forming mandrels and dies, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry.

Related Definitions: N/A

Items:

- a. Rotor assembly equipment for assembly of gas centrifuge rotor tube sections, baffles, and end-caps;

Note: 2B228.a includes precision mandrels, clamps, and shrink fit machines.

- b. Rotor straightening equipment for alignment of gas centrifuge rotor tube sections to a common axis;

Technical Note: The rotor straightening equipment in 2B228.b normally consists of precision measuring probes linked to a computer that subsequently controls the action of, for example, pneumatic rams used for aligning the rotor tube sections.

- c. Bellows-forming mandrels and dies for producing single-convolution bellows.

Technical Note: In 2B228.c, the bellows have all of the following characteristics:

- 1. Inside diameter between 75 mm and 400 mm;
- 2. Length equal to or greater than 12.7 mm;
- 3. Single convolution depth greater than 2 mm; *and*
- 4. Made of high-strength aluminum alloys, maraging steel or high strength “fibrous or filamentary materials”.

89. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B229 is

amended by revising the List of Items Controlled to read as follows:

2B229 Centrifugal multiplane balancing machines, fixed or portable, horizontal or vertical, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCN 2D201 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry.

Related Definitions: N/A

Items:

- a. Centrifugal balancing machines designed for balancing flexible rotors having a length of 600 mm or more and having all of the following characteristics:
 - a.1. Swing or journal diameter greater than 75 mm;
 - a.2. Mass capability of from 0.9 to 23 kg; *and*
 - a.3. Capable of balancing speed of revolution greater than 5,000 r.p.m.;
- b. Centrifugal balancing machines designed for balancing hollow cylindrical rotor components and having all of the following characteristics:
 - b.1. Journal diameter greater than 75 mm;
 - b.2. Mass capability of from 0.9 to 23 kg;
 - b.3. Capable of balancing to a residual imbalance equal to or less than 0.01 kg x mm/kg per plane; *and*
 - b.4. Belt drive type.

90. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B230 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B230 “Pressure transducers” capable of measuring absolute pressures at any point in the range 0 to 13 kPa and having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry.

Related Definitions: (1) Pressure transducers are devices that convert

pressure measurements into an electrical signal. (2) For purposes of this entry, “accuracy” includes non-linearity, hysteresis and repeatability at ambient temperature.

Items:

- a. Pressure sensing elements made of or protected by aluminum, aluminum alloy, nickel or nickel alloy with more than 60% nickel by weight; *and*
- b. Having either of the following characteristics:
 - b.1. A full scale of less than 13 kPa and an “accuracy” of better than $\pm 1\%$ of full-scale; *or*
 - b.2. A full scale of 13 kPa or greater and an “accuracy” of better than ± 130 Pa.

91. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B231 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B231 Vacuum pumps having all of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry. (2) Vacuum pumps specially designed or prepared for the separation of uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: (1) The pumping speed is determined at the measurement point with nitrogen gas or air. (2) The ultimate vacuum is determined at the input of the pump with the input of the pump blocked off.

Items:

- a. Input throat size equal to or greater than 380 mm;
- b. Pumping speed equal to or greater than 15 m³/s; *and*
- c. Capable of producing an ultimate vacuum better than 13.3 mPa.

92. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B232 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

2B232 Multistage light gas guns or other high-velocity gun systems (coil, electromagnetic, and electrothermal types, and other advanced systems) capable of accelerating projectiles to 2 km/s or greater.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E201 (“use”) for technology for items controlled under this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

93. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B290 is amended by revising the ECCN heading and the Related Controls paragraph in the List of Items Controlled to read as follows:

2B290 “Numerically controlled” machine tools not controlled by 2B001 or 2B201.

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List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 2D002 and 2D290 for “software” for items controlled under this entry. (2) See ECCNs 2E001 (“development”), 2E002 (“production”), and 2E290 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 2B001, 2B201, and 2B991.

Related Definitions: * * *

Items:

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94. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B350 is amended by revising the ECCN heading, by revising the Related Controls paragraph in the List of Items Controlled, and by adding an ECCN Controls paragraph immediately following the Related Definitions paragraph in the List of Items Controlled to read as follows:

2B350 Chemical manufacturing facilities and equipment, except valves controlled by 2A226, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: See ECCNs 2A226 and 2A292.

Related Definitions: * * *

ECCN Controls: The controls in this entry do not apply to equipment that is: (a) specially designed for use in civil applications (e.g., food processing, pulp and paper processing, or water purification) AND (b) inappropriate, by the nature of its design, for use in storing, processing, producing or conducting and controlling the flow of chemical weapons precursors controlled by 1C350.

Items:

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95. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2B991 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows: 2B991 Numerical control units for machine tools and “numerically controlled” machine tools, n.e.s.

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List of Items Controlled

Unit: * * *

Related Controls: Also see ECCNs 2B001, 2B201, and 2B290.

Related Definitions: * * *

Items:

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96. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2D001 is amended by revising the List of Items Controlled to read as follows:

2D001 “Software”, other than that controlled by 2D002, specially designed or modified for the “development”, “production” or “use” of equipment controlled by 2A001 or 2B001 to 2B009.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001 (“development”) and 2E101 (“use”) for technology for “software” controlled under this entry. (2) Also see ECCNs 2D101 and 2D201.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

97. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2D002 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

2D002 “Software” for electronic devices, even when residing in an electronic device or system, enabling such devices or systems to function as a “numerical control” unit, capable of coordinating simultaneously more than 4 axes for “contouring control”.

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List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 2E001 (“development”) and 2E201 (“use”) for technology for “software” controlled under this entry. (2) Also see ECCN 2D202.

Related Definitions: * * *

Items:

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98. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2D101 is amended by revising the ECCN heading, the License Requirements section, and the List of Items Controlled to read as follows:

2D101 “Software” specially designed or modified for the “use” of equipment controlled by 2B104, 2B105, 2B109, 2B116, or 2B117.

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to entire entry NP applies to “software” specially designed for the use” of items controlled by 2B104, 2B109, or 2B116 for NP reasons. AT applies to entire entry ..	MT Column 1. NP Column 1. AT Column 1.

License Exceptions

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List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001 (“development”) and 2E101 (“use”) for technology for “software” controlled under this entry. (2) Also see ECCN 9D004.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

99. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2D201 is amended by revising the List of Items Controlled to read as follows:

2D201 “Software” specially designed for the “use” of equipment controlled by 2B204, 2B206, 2B207, 2B209, 2B227, or 2B229.

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List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 2E001 (“development”) and 2E201 (“use”) for technology for “software” controlled under this entry. (2) Also see ECCNs 2D002 and 2D202.

Related Definitions: N/A

ECCN Controls: “Software” specially designed for systems controlled by 2B206.b includes software for simultaneous measurements of wall thickness and contour.

Items: The list of items controlled is contained in the ECCN heading.

100. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2D290 is amended by revising the List of Items Controlled to read as follows:

2D290 “Software” specially designed or modified for the “development”, “production” or “use” of items controlled by 2A290, 2A291, 2A292, 2A293, or 2B290.

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: See ECCN 2E001 (“development”) for technology for “software” controlled under this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

101. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2E001 is amended by revising the License Requirements section to read as follows:

2E001 “Technology” according to the General Technology Note for the “development” of equipment or “software” controlled by 2A, (except 2A991, 2A993, or 2A994), 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998), or 2D (except 2D991, 2D992, or 2D994).

License Requirements

Reason for Control: NS, MT, NP, CB, AT

Control(s)	Country chart
NS applies to “technology” for items controlled by 2A001, 2B001 to 2B009, 2D001 or 2D002.	NS Column 1.

Control(s)	Country chart
MT applies to “technology” for items controlled by 2B004, 2B009, 2B018, 2B104, 2B105, 2B109, 2B116, 2B117, 2D001 or 2D101 for MT reasons.	MT Column 1.
NP applies to “technology” for items controlled by 2A225, 2A226, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232, 2D001, 2D002, 2D101, 2D201 or 2D202 for NP reasons.	NP Column 1.
NP applies to “technology” for items controlled by 2A290 to 2A293, 2B290, or 2D290 for NP reasons.	NP Column 2.
CB applies to “technology” for equipment controlled by 2B350 to 2B352.	CB Column 3.
AT applies to entire entry ..	AT Column 1.

License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

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102. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2E002 is amended by revising the License Requirements section to read as follows:

2E002 “Technology” according to the General Technology Note for the “production” of equipment controlled by 2A, (except 2A991, 2A993, or 2A994) or 2B (except 2B991, 2B993, 2B996, 2B997, or 2B998).

License Requirements

Reason for Control: NS, MT, NP, CB, AT

Control(s)	Country chart
NS applies to “technology” for equipment controlled by 2A001, 2B001 to 2B009.	NS Column 1.
MT applies to “technology” for equipment controlled by 2B004, 2B009, 2B018, 2B104, 2B105, 2B109, 2B116 or 2B117 for MT reasons.	MT Column 1.
NP applies to “technology” for equipment controlled by 2A225, 2A226, 2B001, 2B004, 2B006, 2B007, 2B009, 2B104, 2B109, 2B116, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232 for NP reasons.	NP Column 1.
NP applies to “technology” for equipment controlled by 2A290 to 2A293, 2B290 for NP reasons.	NP Column 2.

Control(s)	Country chart
CB applies to “technology” for equipment controlled by 2B350 to 2B352.	CB Column 3.
AT applies to entire entry ..	AT Column 1.

License Requirement Notes:

See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

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103. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2E101 is amended by revising the ECCN heading and the License Requirements section to read as follows:

2E101 “Technology” according to the General Technology Note for the “use” of equipment or “software” controlled by 2B004, 2B009, 2B104, 2B105, 2B109, 2B116, 2B117, 2D001 or 2D101.

License Requirements

Reason for Control: MT, NP, AT

Control(s)	Country chart
MT applies to “technology” for items controlled by 2B004, 2B009, 2B104, 2B105, 2B109, 2B116, 2B117, 2D001 or 2D101 for MT reasons.	MT Column 1.
NP applies to “technology” for items controlled by 2B004, 2B009, 2B104, 2B109, 2B116, 2D001, or 2D101 for NP reasons.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

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104. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2E201 is amended by revising the ECCN heading and the License Requirements section to read as follows:

2E201 “Technology” according to the General Technology Note for the “use” of equipment or “software” controlled by 2A225, 2A226, 2B001, 2B006, 2B007.b, 2B007.c, 2B008, 2B201, 2B204, 2B206, 2B207, 2B209, 2B225 to 2B232, 2D002, 2D201 or 2D202.

License Requirements

Reason for Control: NP, CB, AT

Control(s)	Country chart
NP applies to entire entry, except 2B008.	NP Column 1.
CB applies to “technology” for valves controlled by 2A226 that meet or exceed the technical parameters in 2B350.g.	CB Column 3.
AT applies to entire entry ..	AT Column 1.

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105. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 2—Materials Processing, ECCN 2E290 is amended by revising the ECCN heading and the License Requirements section to read as follows:

2E290 “Technology” according to the General Technology Note for the “use” of equipment controlled by 2A290, 2A291, 2A292, 2A293, or 2B290.

License Requirements

Reason for Control: NP, CB, AT

Control(s)	Country chart
NP applies to entire entry ..	NP Column 2.
CB applies to “technology” for valves controlled by 2A292 that meet or exceed the technical parameters in 2B350.g.	CB Column 3.
AT applies to entire entry ..	AT Column 1.

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106. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A001 is amended by revising the License Requirements section and the License Exceptions section to read as follows:

3A001 Electronic components, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NS, MT, NP, AT

Control(s)	Country chart
NS applies to entire entry ..	NS Column 2.
MT applies to 3A001.a.1.a	MT Column 1.
NP applies to pulse discharge capacitors in 3A001.e.2 and superconducting solenoidal electromagnets in 3A001.e.3 that meet or exceed the technical parameters in 3A201.a and 3A201.b, respectively.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Exceptions

LVS: N/A for MT or NP

Yes, for the following:

\$1500: 3A001.c

\$3000: 3A001.b.1, .b.2, .b.3, .d, .e and .f

\$5000: 3A001.a and .b.4 to .b.7

GBS: Yes, for 3A001.a.1.b, .a.2 to .a.12, .b.2, and .b.8.

CIV: Yes, for 3A001.a.3.a (for processors with a CTP less than or equal to 12,000 MTOPS), .a.3.b, .a.3.c, .a.4, .a.7, and .a.11.

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107. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A201 is

amended by revising the List of Items Controlled to read as follows:

3A201 Electronic components, other than those controlled by 3A001, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) Also see 3A001.e.2 (capacitors) and 3A001.e.3 (superconducting electromagnets). (3) Superconducting electromagnets specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. Pulse discharge capacitors having either of the following sets of characteristics:
 - a.1. Voltage rating greater than 1.4 kV, energy storage greater than 10 J, capacitance greater than 0.5 μ F, and series inductance less than 50 nH; or
 - a.2. Voltage rating greater than 750 V, capacitance greater than 0.25 μ F, and series inductance less than 10 nH;
- b. Superconducting solenoidal electromagnets having all of the following characteristics:
 - b.1. Capable of creating magnetic fields greater than 2 T;
 - b.2. A ratio of length to inner diameter greater than 2;
 - b.3. Inner diameter greater than 300 mm; and
 - b.4. Magnetic field uniform to better than 1% over the central 50% of the inner volume;

Note: 3A201.b does not control magnets specially designed for and exported “as parts of” medical nuclear magnetic resonance (NMR) imaging systems. The phrase “as part of” does not necessarily mean physical part in the same shipment; separate shipments from different sources are allowed, provided the related export documents clearly specify that the shipments are dispatched “as part of” the imaging systems.

- c. Flash X-ray generators or pulsed electron accelerators having either of the following sets of characteristics:
 - c.1. An accelerator peak electron energy of 500 keV or greater, but less than 25 MeV, and with a “figure of merit” (K) of 0.25 or greater; or
 - c.2. An accelerator peak electron

energy of 25 MeV or greater, and a “peak power” greater than 50 MW;

Note: 3A201.c does not control accelerators that are component parts of devices designed for purposes other than electron beam or X-ray radiation (electron microscopy, for example) nor those designed for medical purposes.

Technical Notes: (1) The “figure of merit” K is defined as: $K = 1.7 \times 10^3 V^{2.65} Q$. V is the peak electron energy in million electron volts. If the accelerator beam pulse duration is less than or equal to 1 μ s, then Q is the total accelerated charge in Coulombs. If the accelerator beam pulse duration is greater than 1 μ s, then Q is the maximum accelerated charge in 1 μ s. Q equals the integral of i with respect to t, over the lesser of 1 μ s or the time duration of the beam pulse $Q = \int i dt$, where i is beam current in amperes and t is time in seconds.

(2) “Peak power” = (peak potential in volts) \times (peak beam current in amperes).

(3) In machines based on microwave accelerating cavities, the time duration of the beam pulse is the lesser of 1 μ s or the duration of the bunched beam packet resulting from one microwave modulator pulse.

(4) In machines based on microwave accelerating cavities, the peak beam current is the average current in the time duration of a bunched beam packet.

108. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A225 is amended by revising the ECCN heading and the Related Controls and Related Definitions paragraphs in the List of Items Controlled to read as follows:

3A225 Frequency changers (also known as converters or inverters) or generators, other than those described in 0B001.c.11, having all of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) Frequency changers (also known as converters or inverters) specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

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109. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A226 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

3A226 High-power direct current power supplies, other than those described in 0B001.j.6, having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCN 3A227. (3) Direct current power supplies specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. Capable of continuously producing, over a time period of 8 hours, 100 V or greater with current output of 500 A or greater; *and*
- b. Current or voltage stability better than 0.1% over a time period of 8 hours.

110. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A227 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

3A227 High-voltage direct current power supplies, other than those described in 0B001.j.5, having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: \$ value

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCN 3A226. (3) Direct current power supplies specially designed or prepared for use in separating uranium isotopes are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. Capable of continuously producing, over a time period of 8 hours, 20 kV or greater with current output of 1 A or greater; *and*
- b. Current or voltage stability better

than 0.1% over a time period of 8 hours.

111. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A228 is amended by revising the List of Items Controlled to read as follows:

3A228 Switching devices, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCN 3A991.k.

Related Definitions: N/A

Items:

- a. Cold-cathode tubes, whether gas filled or not, operating similarly to a spark gap, having all of the following characteristics:
 - a.1. Containing three or more electrodes;
 - a.2. Anode peak voltage rating of 2.5 kV or more;
 - a.3. Anode peak current rating of 100 A or more; *and*
 - a.4. Anode delay time of 10 μ s or less.
- Technical Note:* 3A228.a includes gas krytron tubes and vacuum spraytron tubes.
- b. Triggered spark-gaps having both of the following characteristics:
 - b.1. An anode delay time of 15 μ s or less; *and*
 - b.2. Rated for a peak current of 500 A or more.
- c. Modules or assemblies with a fast switching function having all of the following characteristics:
 - c.1. Anode peak voltage rating greater than 2 kV;
 - c.2. Anode peak current rating of 500 A or more; *and*
 - c.3. Turn-on time of 1 μ s or less.

112. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A229 is amended by revising the List of Items Controlled to read as follows:

3A229 Firing sets and equivalent high-current pulse generators (for detonators controlled by 3A232), as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) High explosives and related equipment for military use are subject to the export licensing authority of the U.S. Department of

State, Office of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: In 3A229.b.5, “rise time” is defined as the time interval from 10% to 90% current amplitude when driving a resistive load.

ECCN Controls: 3A229.b includes xenon flash-lamp drivers.

Items:

- a. Explosive detonator firing sets designed to drive multiple controlled detonators controlled by 3A232;
- b. Modular electrical pulse generators (pulsers) having all of the following characteristics:
 - b.1. Designed for portable, mobile, or ruggedized use;
 - b.2. Enclosed in a dust-tight enclosure;
 - b.3. Capable of delivering their energy in less than 15 μ s;
 - b.4. Having an output greater than 100 A;
 - b.5. Having a “rise time” of less than 10 μ s into loads of less than 40 ohms;
 - b.6. No dimension greater than 254 mm;
 - b.7. Weight less than 25 kg; *and*
 - b.8. Specified for use over an extended temperature range 223 K (–50° C) to 373 K (100° C) or specified as suitable for aerospace applications.

113. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A230 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

3A230 High-speed pulse generators having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number

Related Controls: See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry.

Related Definitions: In 3A230.b, “pulse transition time” is defined as the time interval between 10% and 90% voltage amplitude.

Items:

- a. Output voltage greater than 6 V into a resistive load of less than 55 ohms; *and*
- b. “Pulse transition time” less than 500 ps.

114. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A231 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

3A231 Neutron generator systems, including tubes, having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number; parts and accessories in \$ value

Related Controls: See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry.

Related Definitions: N/A

Items:

- a. Designed for operation without an external vacuum system; and
- b. Utilizing electrostatic acceleration to induce a tritium-deuterium nuclear reaction.

115. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A232 is amended by revising the List of Items Controlled to read as follows:

3A232 Detonators and multipoint initiation systems, as follows (SEE List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) High explosives and related equipment for military use are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: N/A

ECCN Controls: This entry does not control detonators using only primary explosives, such as lead azide.

Items:

- a. Electrically driven explosive detonators, as follows:
 - a.1. Exploding bridge (EB);
 - a.2. Exploding bridge wire (EBW);
 - a.3. Slapper;
 - a.4. Exploding foil initiators (EFI);
- b. Arrangements using single or multiple detonators designed to nearly simultaneously initiate an explosive surface over an area greater than 5,000 mm² from a single firing signal with an initiation timing spread over the

surface of less than 2.5 μs.

Technical Note: The detonators controlled by this entry all utilize a small electrical conductor (bridge, bridge wire or foil) that explosively vaporizes when a fast, high-current electrical pulse is passed through it. In nonslapper types, the exploding conductor starts a chemical detonation in a contacting high-explosive material, such as PETN (Pentaerythritoltetranitrate). In slapper detonators, the explosive vaporization of the electrical conductor drives a flyer or slapper across a gap and the impact of the slapper on an explosive starts a chemical detonation. The slapper in some designs is driven by a magnetic force. The term exploding foil detonator may refer to either a EB or a slapper-type detonator. Also, the word initiator is sometimes used in place of the word detonator.

116. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A233 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

3A233 Mass spectrometers, other than those described in 0B002.g, capable of measuring ions of 230 atomic mass units or greater and having a resolution of better than 2 parts in 230, and ion sources therefor.

* * * * *

List of Items Controlled

Unit: Number

Related Controls: (1) See ECCNs 3E001 (“development” and “production”) and 3E201 (“use”) for technology for items controlled under this entry. (2) Mass spectrometers specially designed or prepared for analyzing on-line samples of UF₆ gas streams are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

- a. Inductively coupled plasma mass spectrometers (ICP/MS);
- b. Glow discharge mass spectrometers (GDMS);
- c. Thermal ionization mass spectrometers (TIMS);
- d. Electron bombardment mass spectrometers that have a source chamber constructed from, lined with or plated with materials resistant to UF₆;
- e. Molecular beam mass spectrometers having either of the following characteristics:
 - e.1. A source chamber constructed from, lined with or plated with stainless steel or molybdenum and

equipped with a cold trap capable of cooling to 193 K (–80° C) or less; or

- e.2. A source chamber constructed from, lined with or plated with materials resistant to UF₆;
- f. Mass spectrometers equipped with a microfluorination ion source designed for actinides or actinide fluorides.

117. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3A292 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

3A292 Oscilloscopes and transient recorders, other than those controlled by 3A002.a.5, and specially designed components therefor.

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: See ECCN 3E292 (“development”, “production”, and “use”) for technology for items controlled under this entry.

Related Definitions: * * *

Items:

* * * * *

118. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3E001 is amended by revising the ECCN heading and the License Requirements section to read as follows:

3E001 “Technology” according to the General Technology Note for the “development” or “production” of equipment or materials controlled by 3A (except 3A292, 3A980, 3A981, 3A991 or 3A992), 3B (except 3B991 or 3B992) or 3C.

License Requirements

Reason for Control: NS, MT, NP, AT

Control(s)	Country chart
NS applies to “technology” for items controlled by 3A001, 3A002, 3B001, 3B002, or 3C001 to 3C004.	NS Column 1.
MT applies to “technology” for equipment controlled by 3A001 or 3A101 for MT reasons.	MT Column 1.
NP applies to “technology” for equipment controlled by 3A001, 3A201, or 3A225 to 3A233 for NP reasons.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Requirement Note: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

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119. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 3—Electronics, ECCN 3E201 is amended by revising the ECCN heading and the License Requirements section to read as follows:

3E201 “Technology” according to the General Technology Note for the “use” of equipment controlled by 3A001.e.2 or .e.3, 3A201 or 3A225 to 3A233.

License Requirements

Reason for Control: NP, AT

Control(s)	Country chart
NP applies to “technology” for equipment controlled by 3A001.e.2, or .e.3, 3A201 or 3A225 to 3A233 for NP reasons.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

* * * * *

120. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A003 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

6A003 Cameras.

* * * * *

List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCNs 6E001 (“development”), 6E002 (“production”), and 6E201 (“use”) for technology for items controlled under this entry. (2) Also see ECCN 6A203. (3) See ECCN 8A002.d and .e for cameras specially designed or modified for underwater use.

Related Definitions: * * *

Items:

* * * * *

121. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A005 is amended by revising the ECCN heading, the License Requirements section, and the Related Controls paragraph in the List of Items Controlled to read as follows:

6A005 “Lasers” (other than those described in 0B001.g.5 or .h.6), components and optical equipment, as follows (see List of Items Controlled).

License Requirements

P≤Reason for Control: NS, NP, AT

Control(s)	Country chart
NS applies to entire entry ..	NS Column 2.

Control(s)	Country chart
NP applies to “lasers” controlled by 6A005.a.1.c, a.2.a, a.4.c., a.6, c.1.b, c.2.b.2.a, c.2.b.2.b, c.2.c.2, or d.2.c, as described in the following License Requirements Note.	NP Column 1.
AT applies to entire entry ..	AT Column 1.

License Requirements Note: NP controls apply to the following “lasers” controlled by 6A005:

(a) Pulsed excimer “lasers” controlled by 6A005.a.1.c having all of the following characteristics:

(1) Operating at wavelengths between 240 and 360 nm;

(2) A repetition rate > 250 Hz; *and*

(3) An average output power > 500 W; (b) Copper vapor “lasers” controlled by 6A005.a.2.a having all of the following characteristics:

(1) Operating at wavelengths between 500 and 600 nm; *and*

(2) An average output power ≥ 40 W;

(c) Pulsed carbon dioxide “lasers” controlled by 6A005.a.4.c (except industrial CO₂ lasers used in applications such as cutting and welding) having all of the following characteristics:

(1) Operating at wavelengths between 9,000 and 11,000 nm;

(2) A repetition rate > 250 Hz;

(3) An average output power > 500 W; *and*

(4) A pulse width < 200 ns;

(d) Argon ion “lasers” controlled by 6A005.a.6 having all of the following characteristics:

(1) Operating at wavelengths between 400 and 515 nm; *and*

(2) An average output power > 40 W;

(e) Alexandrite “lasers” controlled by 6A005.c.1.b having all of the following characteristics:

(1) Operating at wavelengths between 720 and 800 nm;

(2) A bandwidth ≤ 0.005 nm;

(3) A repetition rate > 125 Hz; *and*

(4) Average output power > 30 W; (f) Single-transverse mode output neodymium-doped (other than glass) “lasers” controlled by 6A005.c.2.b.2.a with an average output power > 40 W;

(g) Multiple-transverse mode output neodymium-doped (other than glass) “lasers” controlled by 6A005.c.2.b.2.b with an average output power > 50 W; (h) Neodymium-doped (other than glass) “lasers” controlled by 6A005.c.2.c.2 having all of the following characteristics:

(1) Incorporating frequency doubling for output wavelength between 500 and 550 nm; *and*

(2) Average output power > 40 W;

(i) Tunable pulsed single-mode dye “lasers” controlled by 6A005.d.2.c operating at wavelengths between 300 and 800 nm.

License Exceptions

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List of Items Controlled

Unit: * * *

Related Controls: (1) See ECCN 6D001 for “software” for items controlled under this entry. (2) See ECCNs 6E001 (“development”), 6E002 (“production”), and 6E201 (“use”) for technology for items controlled under this entry. (3) Also see ECCNs 6A205 and 6A995. (4) See ECCN 3B001 for excimer “lasers” specially designed for lithography equipment. (5) “Lasers” specially designed or prepared for use in isotope separation are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (6) Shared aperture optical elements, capable of operating in “super-high power laser” applications, are subject to the export licensing authority of the U.S. Department of State, Office of Defense Trade Controls (see 22 CFR part 121).

Related Definitions: * * *

Items:

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122. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A202 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

6A202 Photomultiplier tubes having both of the following characteristics (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Number

Related Controls: See ECCNs 6E001 (“development”), 6E002 (“production”), and 6E201 (“use”) for technology for items controlled under this entry.

Related Definitions: N/A

Items:

a. Photocathode area of greater than 20 cm²; *and*

b. Anode pulse rise time of less than 1 ns.

123. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A203 is amended by revising the List of Items Controlled to read as follows:

6A203 Cameras and components, other than those controlled by 6A003, as follows (see List of Items Controlled).

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List of Items Controlled

Unit: Equipment and components in number; parts and accessories in \$ value

Related Controls: (1) See ECCNs 6E001 ("development"), 6E002 ("production"), and 6E201 ("use") for technology for items controlled under this entry. (2) Also see ECCN 6A003.a.2, a.3, and a.4.

Related Definitions: N/A

Items:

a. Mechanical rotating mirror cameras, as follows, and specially designed components therefor:

- a.1. Framing cameras with recording rates greater than 225,000 frames per second;
- a.2. Streak cameras with writing speeds greater than 0.5 mm per microsecond;

Note: Components of cameras controlled by 6A203.a include their synchronizing electronics units and rotor assemblies consisting of turbines, mirrors and bearings.

b. Electronic streak cameras, electronic framing cameras, tubes and devices, as follows:

- b.1. Electronic streak cameras capable of 50 ns or less time resolution;
- b.2. Streak tubes for cameras controlled by 6A203.b.1;
- b.3. Electronic (or electronically shuttered) framing cameras capable of 50 ns or less frame exposure time;

b.4. Framing tubes and solid-state imaging devices for use with cameras controlled by 6A203.b.3, as follows:

- b.4.a. Proximity focused image intensifier tubes having the photocathode deposited on a transparent conductive coating to decrease photocathode sheet resistance;
- b.4.b. Gated silicon intensifier target (SIT) videcon tubes, where a fast system allows gating the photoelectrons from the photocathode before they impinge on the SIT plate;
- b.4.c. Kerr or Pockels cell electro-optical shuttering;
- b.4.d. Other framing tubes and solid-state imaging devices having a fast-image gating time of less than 50 ns specially designed for cameras controlled by 6A203.b.3.

c. Radiation-hardened TV cameras, or lenses therefor, specially designed or rated as radiation hardened to withstand a total radiation dose

greater than 50×10^3 Gy (silicon) (5×10^6 rad (silicon)) without operational degradation.

Technical Note: The term Gy (silicon) refers to the energy in Joules per kilogram absorbed by an unshielded silicon sample when exposed to ionizing radiation.

124. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A205 is amended by revising ECCN heading and the List of Items Controlled to read as follows:

6A205 "Lasers", "laser" amplifiers and oscillators, other than those controlled by 6A005 or described in 0B001.g.5 or h.6, as follows (see List of Items Controlled).

* * * * *

List of Items Controlled

Unit: Equipment in number; parts and accessories in \$ value

Related Controls: (1) See ECCNs 6E001 ("development"), 6E002 ("production"), and 6E201 ("use") for technology for items controlled under this entry. (2) Also see ECCNs 6A005 and 6A995. (3) "Lasers" specially designed or prepared for use in isotope separation are subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: N/A

Items:

a. Argon ion "lasers" having both of the following characteristics:

- a.1. Operating at wavelengths between 400 nm and 515 nm; *and*
- a.2. An average output power greater than 40 W;

b. Tunable pulsed single-mode dye laser oscillators having all of the following characteristics:

- b.1. Operating at wavelengths between 300 nm and 800 nm;
- b.2. An average output power greater than 1 W;
- b.3. A repetition rate greater than 1 kHz; *and*

b.4. Pulse width less than 100 ns;

c. Tunable pulsed dye laser amplifiers and oscillators having all of the following characteristics:

- c.1. Operating at wavelengths between 300 nm and 800 nm;
- c.2. An average output power greater than 30 W;
- c.3. A repetition rate greater than 1 kHz; *and*
- c.4. Pulse width less than 100 ns;

Note: 6A205.c does not control single mode oscillators.

d. Pulsed carbon dioxide "lasers"

having all of the following characteristics:

- d.1. Operating at wavelengths between 9,000 nm and 11,000 nm;
- d.2. A repetition rate greater than 250 Hz;
- d.3. An average output power greater than 500 W; *and*
- d.4. Pulse width of less than 200 ns;
- e. Para-hydrogen Raman shifters designed to operate at 16 micrometer output wavelength and at a repetition rate greater than 250 Hz;
- f. Pulse-excited, Q-switched neodymium-doped (other than glass) "lasers" having all of the following characteristics:
 - f.1. An output wavelength exceeding 1,000 nm, but not exceeding 1,100 nm;
 - f.2. A pulse duration equal to or more than 1 ns; *and*
 - f.3. A multiple-transverse mode output having an average power exceeding 50 W.

125. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A225 is amended by revising ECCN heading and the List of Items Controlled to read as follows:

6A225 Velocity interferometers for measuring velocities exceeding 1 km/s during time intervals of less than 10 microseconds.

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List of Items Controlled

Unit: Equipment in number; parts and accessories in \$ value

Related Controls: See ECCNs 6E001 ("development"), 6E002 ("production"), and 6E201 ("use") for technology for items controlled under this entry.

Related Definitions: N/A

ECCN Controls: 6A225 includes velocity interferometers, such as VISARs (Velocity interferometer systems for any reflector) and DLIs (Doppler laser interferometers).

Items: The list of items controlled is contained in the ECCN heading.

126. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6A226 is amended by revising the Related Controls paragraph in the List of Items Controlled to read as follows:

6A226 Pressure sensors, as follows (see List of Items Controlled).

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List of Items Controlled

Unit: * * *

Related Controls: See ECCNs 6E001 ("development"), 6E002

(“production”), and 6E201 (“use”) for technology for items controlled under this entry.

Related Definitions: * * *

Items:

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127. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6D001 is amended by revising the List of Items Controlled to read as follows:

6D001 “Software” specially designed for the “development” or “production” of equipment controlled by 6A004, 6A005, 6A008 or 6B008.

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List of Items Controlled

Unit: \$ value

Related Controls: See ECCNs 6E001 (“development”) and 6E102 (“use”) for “technology” for items controlled under this entry.

Related Definitions: N/A

Items: The list of items controlled is contained in the ECCN heading.

128. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6E001 is amended by revising the License Requirements section to read as follows:

6E001 “Technology” according to the General Technology Note for the “development” of equipment, materials or “software” controlled by 6A (except 6A018, 6A991, 6A992, 6A994, 6A995, 6A996, 6A997, or 6A998), 6B (except 6B995), 6C (except 6C992 or 6C994), or 6D (except 6D991, 6D992, or 6D993).

License Requirements

Reason for Control: NS, MT, NP, RS, CC, AT, UN

Control(s)	Country Chart
NS applies to “technology” for items controlled by 6A001 to 6A008, 6B004 to 6B008, 6C002 to 6C005, or 6D001 to 6D003.	NS Column 1.
MT applies to “technology” for items controlled by 6A002, 6A007, 6A008, 6A102, 6A107, 6A108, 6B008, 6B108, 6D001, 6D002, 6D102 or 6D103 for MT reasons.	MT Column 1.
NP applies to “technology” for items controlled by 6A003, 6A005, 6A202, 6A203, 6A205, 6A225, 6A226 or 6D001 for NP reasons.	NP Column 1.
RS applies to “technology” for equipment controlled by 6A002 or 6A003 for RS reasons.	RS Column 1.
CC applies to “technology” for equipment controlled by 6A002 for CC reasons.	CC Column 1.
AT applies to entire entry ..	AT Column 1.
UN applies to “technology” for equipment controlled by 6A002 or 6A003 for UN reasons.	Rwanda; Federal Republic of Yugoslavia (Serbia and Montenegro).

License Requirement Notes: See § 743.1 of the EAR for reporting requirements for exports under License Exceptions.

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129. In Supplement No. 1 to Part 774 (the Commerce Control List), Category 6—Sensors and Lasers, ECCN 6E201 is amended by revising the ECCN heading and the List of Items Controlled to read as follows:

6E201 “Technology” according to the General Technology Note for the “use” of equipment controlled by 6A003.a.2, 6A003.a.3, 6A003.a.4, 6A005.a.1.c, 6A005.a.2.a, 6A005.a.4.c, 6A005.a.6, 6A005.c.1.b, 6A005.c.2.b.2.a, 6A005.c.2.b.2.b, 6A005.c.2.c.2, or 6A005.d.2.c., 6A202, 6A203, 6A205, 6A225 or 6A226.

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List of Items Controlled

Unit: N/A

Related Controls: N/A

Related Definitions: N/A

ECCN Controls: This entry only controls “technology” for “lasers” in 6A005 that are controlled for NP reasons.

Items: The list of items controlled is contained in the ECCN heading.

Dated: August 16, 2002.

James J. Jochum,

Assistant Secretary for Export Administration.

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